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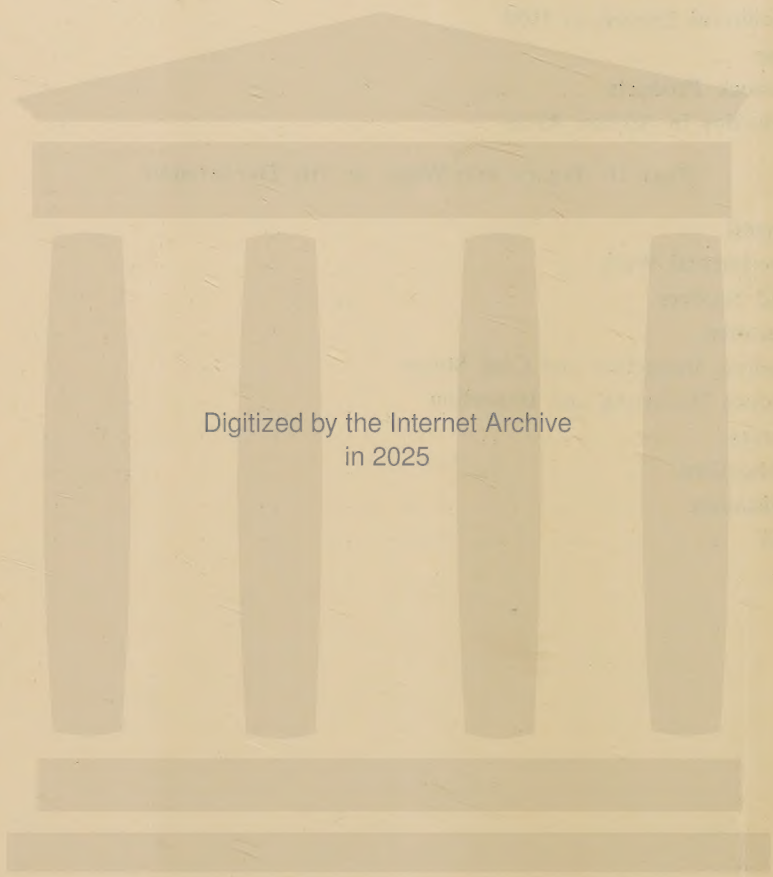

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PART I—AGRICULTURE IN 1950

WEATHER

Over the main agricultural areas of Kenya Colony the rainfall over the year as a whole was below the average. The long rains broke early and promised well, but unfortunately a dry spell followed maize plantings in the Trans Nzoia and Uasin Gishu areas which necessitated replanting over a considerable acreage. Similarly, in the Machakos and Kitui districts of Central Province, the early cessation of the long rains resulted in poor harvests. At the Coast, June was dry and high winds exaggerated this lack of rain. Nyanza as usual enjoyed favourable growing conditions. The wheat-growing areas of Rift Valley Province experienced well distributed rainfall during July and August with consequent benefit to the crop and the Coast cotton crop received rain during the critical months of July, August and September, resulting in a bumper harvest being picked. In all areas the short rains either failed completely or were inadequate for the success of the short rains crops. The below average rainfall for the year was directly attributable to this failure of the short rains.

(*For the following detailed notes on weather conditions, together with Tables A and B, the Director of Agriculture is indebted to the Director of the East African Meteorological Department.*)

Rift.—Rainfall was slightly above average in April and again from June to September, but the other months were below average and the total for the year was 8 per cent below average.

West Rift.—Except for March, when rainfall was normal, and July with 30 per cent above average, rainfall was below average for all other months of the year resulting in an annual total 17 per cent below average.

East Rift.—In January, March, April and July rainfall was above average but shortfalls in the other months of the year resulted in an annual total 12 per cent below average.

Trans Nzoia.—Except for August totals were above average from June to October but all other months showed a deficit and the yearly total was 8 per cent below normal.

Nyanza.—March and October were the only months with rainfall markedly in excess of average; November and December were much drier than usual and the total rainfall for the year was 7 per cent below average.

Main Coffee Areas.—In March and April the rains were good but the "long rains" finished earlier than usual and rainfall in May was 34 per cent below average. August was a wet month, but from September to December the rains were poor, and there was a deficit of 18 per cent for the year as a whole.

Coast.—In March, April and July rainfall was above average but the other months were drier than normal and the total rainfall for the year was 17 per cent below normal.

TABLE A

RAINFALL OVER THE MAIN AGRICULTURAL AREAS OF KENYA—1950

District	Rift		West Rift		East Rift		Trans Nzoia		Nyanza		Main Coffee Areas		Coast	
Number of Stations	20		11		20		22		23		27		14	
	Mean Fall 1950	Ave. Fall	Mean Fall 1950	Ave. Fall	Mean Fall 1950	Ave. Fall	Mean Fall 1950	Ave. Fall	Mean Fall 1950	Ave. Fall	Mean Fall 1950	Ave. Fall	Mean Fall 1950	Ave. Fall
	In.	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*
January	0·57	0·95	1·33	1·45	1·31	1·02	0·61	0·79	1·45	1·83	1·11	1·44	0·31	0·80
February	0·26	1·40	0·45	2·25	0·12	1·20	0·07	1·47	1·21	3·02	0·25	1·72	0·00	0·57
March	2·68	2·98	4·07	4·01	2·83	2·35	2·45	2·75	8·41	4·97	5·96	4·50	3·08	2·09
April	5·94	5·41	5·97	7·55	6·99	4·96	5·34	5·83	7·63	8·78	10·41	9·14	6·87	6·55
May	3·19	4·93	4·76	6·31	2·73	3·87	3·54	6·41	8·73	9·27	3·63	5·47	10·90	12·85
June	3·51	3·44	3·90	4·83	2·20	2·49	5·54	4·87	5·79	5·68	1·08	1·65	2·25	4·86
July	5·46	4·51	7·11	5·46	4·64	3·88	8·63	6·20	4·40	5·02	0·40	0·67	3·80	3·07
August	4·90	4·61	5·08	6·16	2·39	3·92	5·95	6·56	6·09	6·33	1·90	0·87	1·86	2·68
September	3·63	2·72	3·75	3·80	1·40	1·83	4·75	4·04	6·36	5·69	0·35	1·10	2·25	2·63
October	1·99	2·19	3·01	3·16	0·99	2·16	3·84	2·74	5·40	4·04	1·47	2·79	1·86	2·98
November	1·53	2·62	1·88	3·67	2·33	3·09	0·47	2·29	1·23	4·45	4·28	5·67	2·23	2·85
December	0·64	1·62	1·01	2·32	0·65	1·87	0·35	0·98	1·51	3·16	0·86	3·44	1·82	2·76
Year	34·30	37·38	42·32	50·97	28·58	32·64	41·54	44·93	58·21	62·24	31·70	38·46	37·23	44·69

TABLE B

PERCENTAGE DEPARTURES

	Rift	West Rift	East Rift	Trans Nzoia	Nyanza	Main Coffee Areas	Coast
January	−40	− 8	+28	−23	−21	−23	−61
February	−81	−80	−90	−95	−60	−85	−99
March	−10	+ 2	+20	−11	+69	+32	+47
April	+10	−21	+41	− 8	−13	+14	+ 5
May	−35	−25	−30	−45	− 6	−34	−15
June	+ 2	−19	−12	+14	+ 2	−35	−54
July	+21	+30	+20	+39	−12	−40	+24
August	+ 6	−18	−39	− 9	− 4	+118	−30
September	+33	− 1	−24	+17	+12	−68	−15
October	− 9	− 5	−54	+40	+34	− 7	−38
November	−42	−49	−25	−79	−72	−26	−22
December	−60	−56	−65	−64	−52	−75	−34
YEAR	− 8	−17	−12	− 8	− 7	−18	−17

AGRICULTURAL EXPORTS IN 1950

At the close of the half-century supply and demand on the world market resulted in peak prices being paid for all agricultural produce. The monetary value of agricultural exports from Kenya during 1950 was £14,750,178 which revealed an impressive increase of 53.07 per cent over the 1949 figure of £9,635,894. At the same time it should be noted that with the exception of coffee, tea and maize the actual quantities of produce exported were not, generally speaking, greater than in 1949. This fact lends further emphasis to the world increase of prices.

For the fourth consecutive year sisal held its place as the most valuable export commodity; the comparatively small 7.4 per cent increase in quantity being overshadowed by the 42.4 per cent increase in monetary value. The actual figures were 35,875 tons of sisal exported at a value of £4,061,168. Coffee remained in second place and although the quantity exported rose by 31 per cent over the previous year it did not exceed the figures for 1947 and 1948. The value of £3,549,406 however was the highest on record and showed a startling increase of 135.1 per cent over the previous year. Tea regained third place over wattle bark extract, the quantity and value of the former increasing by 55.7 per cent and 86.1 per cent respectively. Wattle bark extract increased slightly by 9.7 per cent and 10.1 per cent respectively; at the same time it is interesting to note that wattle bark exports fell from thirteenth place to twenty-sixth place in the list of values while the quantity exported decreased by 70.2 per cent; thus, although the factories were working to capacity the amount of bark coming forward from the grower was less than in 1949.

The fifth most valuable commodity exported from Kenya during 1950 was hides of cattle (shade dried) followed by goat and kid skins (shade dried), maize, pyrethrum, raw cotton, meal and flour of wheat, wool, meat of swine (bacon, ham and pork), butter, sheep and lamb skins (shade dried), hides of cattle (sun dried), sunflower seed, beans and peas, cotton seed oil, etc., in that order. For full details see Table C.

The record maize crop of 1949/50 sent maize exports rocketing from twentieth place to seventh place in the list of values, the percentage increase being 1,449.9 per cent; although the quantity exported through Mombasa increased by 877.2 per cent over 1949, it was little over half the amount exported in 1939.

The value of wool exports increased by 120.5 per cent while the quantity only increased by 15.5 per cent. Wheat decreased by 76.7 per cent and 78.5 per cent respectively. Bacon and ham rose from twenty-sixth to twelfth place and beans rose from thirtieth to seventeenth place in the list of values. It is interesting to compare the quantities of different products exported in 1939 and in 1950; the main items which show an increase over 1939 are bacon and ham, flax, pulses other than beans, wheat, wheat flour, linseed, cashew nuts, sunflower seed, essential oils and wattle bark extract. The following commodities are all below the 1939 export figures when compared in quantity only, beeswax, butter, cheese, wool, copra, coffee, cotton, beans, maize, groundnuts, sesame, coconut oil, potatoes, pyrethrum, sugar, tea, wattle bark and passion fruit juice. Greater internal consumption is of course one of the reasons for these decreased exports.

Table D gives the quantities and values of the major items of agricultural produce exported during the last five years and for comparison, the corresponding figures for 1939.

TABLE C

DOMESTIC EXPORTS—KENYA, 1950*

	Unit of Quantity	Quantity	Value
			£
LIVE ANIMALS, CHIEFLY FOR FOOD:—			
Bovine Cattle	No.	10	110
Sheep and Lambs	,,	147	178
Goats and Kids	,,	818	841
Other Animals (including Poultry, etc.)	,,	1,062	147
MEAT AND PREPARATIONS THEREOF:—			
Meat of Swine (Bacon, Hams and Pork)	Cwt.	16,323	157,418
Other Meat and Preparations Thereof	,,	7,213	50,106
DAIRY PRODUCTS, EGGS AND HONEY:—			
Milk and Cream, Fresh	Gal.	499	71
Milk (Dried Powder)	Cwt.	15	229
Cream (Evaporated or Condensed)	,,	4	61
Butter (Fresh or Salted), including Melted or Clarified	,,	11,040	156,403
Cheese	,,	162	1,712
Eggs in the Shell	Dozen	67,550	6,993
Natural Honey	Cwt.	1	13
EDIBLE OILS AND FATS:—			
Lard, not including Neutral Lard	,,	25	222
Other Animal Oils, Fats and Greases	,,	468	2,573
Cotton Seed Oil	,,	14,799	83,478
Other Edible Oils and Fats	,,	7,939	46,608
CEREALS:—			
Wheat	,,	30,415	43,184
Maize	,,	617,085	720,235
Millets	,,	3,615	2,341
Other Cereals	,,	554	775
MANUFACTURED PRODUCTS OF CEREALS PRINCIPALLY FOR HUMAN FOOD:—			
Meal and Flour of Wheat, Spelt and Meslin	,,	125,893	223,016
Maize Meal and Flour	,,	83,325	67,125
Meal and Flour of Other or Mixed Cereals	,,	2	2
Other Manufactured Products of Cereals	,,	794	4,800
EDIBLE NUTS EXCEPT OILNUTS:—			
Coconuts	,,	165	54
Cashew Nuts	,,	2,805	22,381
VEGETABLES, ROOTS AND TUBERS, CHIEFLY USED FOR HUMAN FOOD AND THEIR PREPARATIONS, N.E.S.:—			
Potatoes, Fresh (not including Sweet Potatoes)	,,	43,990	30,558
Other Vegetables, Fresh or Simply Prepared in Brine	,,	9,613	11,863
Beans and Peas	,,	49,902	89,500
Pulses	,,	31,751	49,244
Dhall	,,	8,218	23,689
Other Lentils and Legumes	,,	4	13

*These figures are taken from the Annual Trade Report for 1950.

TABLE C—(*Contd.*)

DOMESTIC EXPORTS—KENYA, 1950*—(*Contd.*)

	Unit of Quantity	Quantity	Value
			£
SUGAR, COFFEE, TEA, ETC.:—			
Sugar, not Refined in Bulk	Cwt.	880	1,746
Jaggery	,,	2	3
Coffee, not Roasted	,,	204,804	3,549,406
Tea	,,	82,514	1,333,854
PASSION FRUIT JUICE	Imp. gal.	14,091	7,763
OILSEEDS, NUTS AND KERNELS:—			
Groundnuts	Tons	—	17
Copra	,,	—	—
Soya Beans	,,	—	—
Cotton Seed	,,	—	—
Castor Seed	,,	278	13,548
Sunflower Seed	,,	2,655	89,634
Other Oilseeds, Nuts and Kernels	,,	632	33,394
BEESWAX	Cwt.	739	13,235
WATTLE BARK EXTRACT	,,	482,527	978,945
ESSENTIAL VEGETABLE OILS:—			
Lemon Grass Oil	lb.	—	—
Bitter Orange Oil	,,	—	—
Geranium Oil	,,	4,318	10,317
Other Essential Vegetable Oils	,,	165,473	24,223
HIDES AND SKINS:—			
Hides of Cattle: Sun-dried	Cwt.	10,744	111,745
Shade-dried	,,	63,226	791,388
Calf Skins and Kips: Sun-dried	,,	192	1,319
Shade-dried	,,	720	5,937
Sheep Skins and Lamb Skins:			
Sun-dried	,,	1,889	15,276
Shade-dried	,,	12,294	148,459
Other Hides and Skins	,,	4,187	37,189
Goat Skins and Kid Skins: Sun-dried	,,	3,113	73,044
Shade-dried	,,	20,911	754,549
Sheep and Lambs' Wool	Centals of 100 lb.	11,865	208,661
Cotton Raw	,,	18,879	227,823
Flax	Tons	120	15,736
Sisal	,,	35,875	4,061,168
Mangrove Bark	,,	203	4,183
Wattle Bark	,,	1,765	34,544
Pyrethrum	Cwt.	22,932	330,723
Papain	,,	16	1,465

* These figures are taken from the Annual Trade Report for 1950.

QUANTITIES AND VALUES OF CERTAIN AGRICULTURAL COMMODITIES,

Commodities	Unit	1939	1947
Animals Living:—			
Cattle	No.	—	21
Sheep and Goats	,,	—	864
Animal Products:—			
Bacon and Ham	Cwt.	1,376	6,592
Beeswax	,,	1,208	590
Butter	,,	19,331	28,539
Cheese	,,	652	898
Ghee	,,	1,946	142
Hides (shade-dried)	,,	19,245	21,980
Skins (Sheep and Goats) (shade-dried)	No.	337,082	1,392,149
Hides (sun-dried)	Cwt.	21,737	9,810
Skins (Sheep and Goats) (sun-dried)	No.	1,014,543	1,051,632
Wool	Centals of 100 lb.	15,114	9,089
Crop Produce:—			
Coconuts and Copra	Tons	215	56
Coffee	Cwt.	338,125	213,814
Cotton	Centals of 100 lb.	59,677	14,549
Sisal	Tons	29,163	24,283
Flax	,,	16	128
Beans (including Soya Beans)	Cwt.	123,002	29,750
Maize	,,	1,007,125	1,248,802
Maize Meal and Flour	,,	112,029	114,377
Pulses other than Beans	,,	7,756	176,208
Wheat	,,	973	328,242
Wheat Flour	,,	63,883	166,088
Grain other than Maize and Wheat	,,	14,618	70,702
Groundnuts	Tons	402	—
Linseed	,,	—	5
Cashew Nuts	,,	32	59
Sesame	,,	1,283	—
Sunflower Seed	,,	477	86
Coconut Oil	Imp. gal.	33,152	1,012
Essential Oils	,,	3,660	5,671
Groundnut Oil	,,	6,233	64
Sesame Oil	,,	89,944	758
Potatoes	Cwt.	173,046	54,898
Pyrethrum	,,	55,628	34,583
Sugar	,,	81,463	29,053
Tea	,,	88,627	85,588
Wattle Bark	,,	226,716	205,007
Wattle Extract	,,	131,312	231,789
Passion Fruit Juice	Imp. gal.	22,744	9,511
Other Agricultural Produce	—	—	—
Total	£	—	—

*Unit=Cwt.

†Unit=Cwt.

BLE D

IE PRODUCE OF KENYA, EXPORTED DURING THE YEARS 1939 AND 1947 TO 1950

QUANTITY			VALUE				
1948	1949	1950	1939	1947	1948	1949	1950
			£	£	£	£	£
—	—	10	—	74	—	—	110
742	592	—	—	801	676	630	—
4,391	2,345	16,323	9,080	64,031	45,140	24,507	157,418
638	1,172	739	5,162	9,320	9,109	16,503	13,235
18,735	10,162	11,040	82,797	273,735	224,970	131,289	156,403
814	107	162	2,987	6,614	7,787	1,053	1,712
4	—	—	7,862	846	26	—	—
34,476	44,143	63,226	53,372	277,696	290,802	373,486	791,388
,120,957	*26,035	*33,205	18,152	211,655	425,899	608,613	903,008
10,567	9,885	10,744	43,444	67,927	67,975	62,990	111,745
829,181	*6,345	*5,002	40,900	118,100	103,802	99,592	88,320
8,940	10,267	11,865	56,578	41,846	91,714	94,619	208,661
31	25	8	1,561	586	338	238	54
287,644	156,300	204,804	800,827	1,311,633	2,018,573	1,509,836	3,549,406
9,056	22,246	18,879	124,021	99,472	96,688	248,374	227,823
30,639	33,413	35,875	442,434	1,360,883	2,365,717	2,851,823	4,061,168
56	103	120	810	14,504	8,703	15,408	15,736
40,548	9,607	49,902	40,250	45,378	55,518	17,136	89,500
272,152	63,150	617,085	222,037	617,730	176,780	46,467	720,235
125,416	47,146	83,325	25,450	76,760	127,374	37,182	67,125
85,887	26,364	31,751	2,702	363,084	167,038	40,390	49,244
128,125	141,772	30,415	393	285,449	143,157	185,374	43,184
177,239	137,625	125,893	50,655	216,314	273,969	226,511	223,016
114,162	32,171	4,169	4,424	50,815	91,211	22,645	3,116
65	—	—	4,442	2	2,060	4	17
—	625	581	5	319	—	34,999	32,499
69	46	140	1,812	13,952	13,549	10,396	22,381
—	—	—	14,499	3	—	4	—
828	1,865	2,655	3,997	1,829	26,747	60,601	89,634
411	†20	—	2,346	257	103	404	—
4,100	‡51,548	‡169,791	4,956	17,675	7,270	18,890	34,540
75	†157	†1	680	17	24	660	8
884	†52	†31	10,008	207	276	202	154
33,762	49,837	43,990	29,199	29,681	20,008	32,654	30,558
29,395	76,506	22,932	357,170	271,999	188,622	604,620	330,723
10,754	3,707	880	50,308	31,621	12,683	4,508	1,746
53,089	53,009	82,514	501,732	907,079	642,484	716,641	1,333,854
229,560	118,300	35,300	72,846	132,924	191,073	111,157	34,544
254,710	439,721	482,527	91,438	313,685	501,080	888,841	978,945
29,432	25,602	14,091	6,713	4,366	13,763	13,408	7,763
—	—	—	54,446	294,799	370,690	523,239	371,265
—	—	—	3,242,475	7,589,578	8,783,398	9,635,894	14,750,178

‡Unit=lb.

CROPS

Barley.—The acreage under barley dropped by 718 acres to a total of 19,353 acres. From that area 114,585 bags (of 180 lb.) were produced which resulted in a slight increase in the yield per acre from 5.88 bags the previous year to 5.92 bags during the year under review. Of the total amount produced 76,601 bags were retained in the homestead, mostly for pig feed. The price offered for malting barley provided the highest cash incentive per acre for scheduled crops in the Rift Valley Province.

Cashew Nuts.—Production fell from 789 tons the previous year to 555 tons valued at £6,625. The price to the producer remained at 10 cents per lb. The home processing of the nuts for the Mombasa market increased. It is estimated that only 65 per cent of the total crop was offered at Kilifi.

Cassava.—The total acreage under cassava increased greatly as each African family was encouraged to plant at least a quarter of an acre as a locust invasion safeguard. In Central Province much was dug and eaten during the periods of food shortage.

In Nyanza Province 25,717 bags (of 125 lb.) of dried root were delivered to Control and realized £7,625 to the growers. At the Coast, brown streak appeared in some areas. The United Kingdom continued to take all the exportable surplus.

Chillies.—The average price paid to growers was Sh. 1 per lb. and 1,691 cwt. were marketed, valued at £9,470, from the Voi district of Coast Province. The new "Chillies Grading Rules" considerably improved the quality of produce offered.

Coffee.—The total production of 6,335 tons of clean coffee for the 1949/50 season was 227 tons less than the previous season and was valued at £2,192,520 compared with £1,090,280 realized the year before. The registered European acreage under coffee was 59,724 acres. The average payment to growers was Sh. 350 per cwt. compared with the Sh. 161/25 per cwt. in 1948/49, but the average yield per acre fell from 2.23 cwt. to 2.1 cwt.

African-grown coffee covered a total area of 1,374 acres but much of it was occupied by young pre-bearing trees. African licences numbered 5,231. Sales in Central Province realized £20,899 while the total payout in Nyanza was £2,587.

Copra.—Production dropped to 1,182 tons valued at £43,973, from 1,744 tons valued at £50,000 the previous year. The price paid to producers ranged from Sh. 10/13 to Sh. 13/80 per frasila (of 36 lb.). Better prices were paid for the whole coconut and it was not worth the growers' trouble to turn them into copra.

Cotton.—From the 1949/50 crop the ginneries turned out 7,973 bales, 7,045 in Nyanza Province and 928 at the Coast; each bale consisting of 400 lb. of cotton lint. Before the 1950 plantings commenced the new prices for seed cotton payable to the grower were announced; these were 44 cents per lb. for A.R. quality and 15 cents per lb. for B.R. quality as compared with 30 cents and 11 cents respectively the year before. As a result of these new prices a slight increase in acreage was experienced though not encouraged; the chief object was to increase output from the same acreage by better methods of cultivation, spacing, weeding, picking and grading. It was estimated that the crop in the ground during 1950 would yield 8,500 bales in Nyanza and 4,500 bales at the Coast. The latter crop was favoured by one of the best growing years on record.

Essential Oils.—75.8 tons left the country valued at £34,540; of this, 38½ cwt. were geranium oil worth £10,317, a slight drop from the previous year, though the total figure for all essential oils was a 229.3 per cent increase over 1949. Increased interest was shown in the production of essential oils the limiting factor being lack of suitable planting material.

Flax.—This minor industry remained steady; 120 tons of fibre were exported valued at £15,736. This would indicate a good return per acre but this exigent crop has never been a popular one in Kenya.

Groundnuts.—Deliveries to Control increased by almost 11,000 bags of 180 lb. each; an encouraging sign to those Field Officers in African areas who advocated groundnuts as an invaluable legume for incorporation in a simple rotation. Nyanza Province was responsible for 21,418 bags valued at £34,769 from the total of 27,955 bags. The price paid to producers remained the same at Sh. 32/40 per 180 lb. without bag, but this will be increased for the next crop.

Kapok.—140,000 lb. were produced realizing £2,450 to the producer, i.e. 35 cents per lb.; this exceeded the previous year's total by 51,288 lb. During the latter part of the year competitive buying was introduced and the price rose in some cases to as much as Sh. 1 per lb.

Linseed.—This crop was grown on a very small scale and with the high prices offered for wheat, production was confined to small local acreages for livestock feed. The acreage fell from 8,099 to 3,044 acres; the total yield was 5,547 bags (of 200 lb.) giving an average of 1.82 bags per acre, which was an increase of 0.15 bags per acre over the previous season. 1,043 bags were retained on the individual farms, the remainder being crushed at Molo and the resultant linseed cake also being available for stockfeed.

Maize.—The 1950 non-native crop yielded 1,224,765 bags (of 200 lb.) from 144,777 acres. The average yield was thus 7.74 bags per acre; 384,867 bags were retained on farms. In the Rift Valley Province 29 per cent of the available land was under maize and the value of the crop represented 32 per cent of the value of all scheduled crops. It is disappointing to record that the increased production resulted only from increased acreages and not from higher yields per acre; but whilst prices remain high and the mechanization bonuses continue to be granted, expanding acreages must be expected.

Deliveries to Control were as follows:—

	Bags 1948/49	*Bags* 1949/50
Non-African areas	639,356	760,224
African areas	1,015,302	1,627,070
Total	1,654,658	2,387,294

The deliveries from non-African areas and Central Province were chiefly responsible for the overall increase; Nyanza was slightly below its record crop of the previous year, partially due to the very poor and in some cases complete lack of short rains. In many places the standard of cultivation continued to improve among the African growers and emphasis was again laid on the system of alternate husbandry incorporating improved cattle management.

Oats.—The 1950 crop was a good one with the result that there was a surplus of milling oats and much of the crop was disposed of at the lower feeding price. The acreage remained fairly steady at 15,255 acres but production fell from 107,689 bags (of 150 lb.) to 94,840 bags with a corresponding decrease in yield per acre from 6.93 bags to 6.22 bags. 71,238 bags were retained on farms chiefly as stock feed. Apart from cereal production the oat became increasingly popular as a temporary ley or hay crop.

Other Cereals.—The following quantities of other cereals were bought by Control from African areas during 1950:—

Sorghum (*Mtama*)	16,334 bags
Millet (Finger)	31,565 bags
Millet (Bulrush and Foxtail)	11,589 bags

Finger millet was more than the previous year while the other three were somewhat lower. As usual, much was retained by the African grower for food and beer making.

Papain.—The three Asian estates in the south of Coast Province which were originally established to produce papain continued to sell their crop as fresh fruit as the price offered for papain was not sufficiently attractive to justify production. However, the price rose towards the end of the year and they once again commenced tapping for papain.

Passion Fruit.—Approximately 400 acres were growing passion fruit in the European areas of Nyanza Province. Production declined slightly to 25,318 gallons of juice of which 3,600 gallons were consumed on the home market. 14,091 gallons were exported during the calendar year, valued at £7,763; this reduction by nearly half of the previous year's export may be due in some measure to the closure of the South African market.

Potatoes.—Quantities exported from Central Province dropped by about one-third to 7,973 tons valued at £61,427. The decrease was mainly due to the heavy long rains encouraging the incidence of blight, in spite of the increased issue of large quantities of blight-resistant seed. 4,230 tons passed Departmental inspection in the Elburgon area, mainly grown by forest squatters in that area. 2,200 tons were exported from the Colony valued at £30,558. This would appear to indicate that at least 10,000 tons were consumed locally.

Pulses.—The substantial increase in price introduced in 1950 to an average figure of Sh. 30 per bag depending on type and variety had a marked effect on the quantities of pulses offered for sale. Comparative figures were as follows:—

	1948/49	1949/50
	tons	*tons*
Bean, various	2,500	4,073
Field peas	738	760
Cowpeas, gram and others ..	2,898	3,018
Total	6,136	7,851

Sales from Central Province to Control and the fresh market amounted to 8,758 tons valued at £196,346.

Pyrethrum.—Flowers were grown on 22,000 acres and production rose from 1,581 tons to 1,842, whilst the number of European growers increased from 463 to 521. The average payout was Sh. 2/14 per lb. for flowers with a content of 1.5 per cent pyrethrin. 1,147 tons were exported during the year valued at £330,723. In the Rift Valley Province the average yield per acre was 235 lb. of flowers. African growers in Central Province had 300 acres in the Kiambu district and 80 acres in Nyeri district; sun drying was the rule and the resultant quality was reasonable; 56,773 lb. of flowers valued at £2,861 were marketed by the Africans.

Rice.—There was a spectacular increase in rice production in Central Nyanza from those excellent rice growing areas of the lake shore around Kisumu. Production rose from 3,000 bags the year before to something like 10,000 bags; all this rice was irrigated or in swamp areas, it was transplanted from seed beds and thus

high yields were obtained. Production in North Nyanza was poor owing to lack of water supply and the crop was grown under upland conditions. The combined districts marketed 1,336 tons valued at £18,643. Most of the rice grown at the Coast was consumed locally; the irrigated rice of Umba Valley in the Kwale district did particularly well giving an estimated yield of 14,000 bags from 700 acres.

Sisal.—The year was a prosperous one for sisal growers. Production amounted to 39,831 tons of fibre from 106,972 acres of mature sisal cut, whilst a total of 227,152 acres were under the sisal spike. The average yield of fibre per acre was thus 0.37 tons. The price paid for sisal advanced steadily throughout the year, opening at £112 per ton of fibre and closing at £203 per ton for No. 1 c.i.f. United Kingdom basis. The average price obtained by producers, covering all grades of line fibre only, was about £158 per ton. The high price induced a large number of commercial concerns to interest themselves in the purchase of leaf and fibre grown in the African reserves. In Machakos district particularly, this new source of income was rapidly exploited by the Africans who frantically and without thought for the life of the plants, hand decorticated large quantities of fibre. 11,076 tons of leaf and 4,961 tons of fibre were sold by the Africans of Central Province at a total value of £279,496. Similar activity took place in Central Nyanza and to a lesser extent in South Nyanza where the sisal plants marking boundaries and forming hedges came under the knife.

Sugar.—The area under cultivation rose slightly to 13,590 acres and 15,734 tons of refined sugar were produced compared with 11,274 tons the previous year. Only 44 tons were exported worth £1,746. In Central Nyanza many Asian farmers, led by the factory estate, planted improved types of cane, and small quantities were sent to the sugar-producing area in the Coast Province.

Sunflower.—The production of sunflower seed remained steady; in Rift Valley Province the crop occupied 3.5 per cent of the arable land. The average yield experienced on European farms was 3.96 bags (of 100 lb.) per acre; altogether 51,902 bags were harvested off 13,080 acres whilst 9,371 of these bags were retained on the farm. Exports from the Colony rose from 1,865 tons valued at £60,601 during 1949 to 2,655 tons worth £89,634 during the year under review.

Tea.—Kericho experienced a good crop in spite of some hail damage and the retardation of growth in the early part of the year by cold, wet weather. A record production of 14,938,441 lb. of manufactured tea resulted, as compared with 11,457,626 lb. the previous year. This record crop was obtained from 15,767 acres of mature tea from a total of 18,547 acres; this latter figure representing an increase of 782 acres over the foregoing season. In Nyeri district seed was sown in a nursery in readiness for future African growers and 4 acres of tea were planted at stake in order to maintain the enthusiasm for this new cash crop.

Tobacco.—Flue-cured tobacco in Central Province experienced a slight decline; 1,729,169 lb. green leaf were produced valued at £3,928 as compared with 1,830,387 lb. worth £4,266 in 1949. The reduction was partially due to the crop harvested in January and February suffering from lack of rain. Native-cured tobacco increased in popularity in Nyeri and Meru district, and the product was distributed all over the country. It was not possible to obtain statistics of the total quantities sold but recorded sales indicated that exports were 874,976 lb. valued at £32,900 which were more than twice the 1949 figures of 342,819 lb. and £16,194 respectively. At the Coast, 35,840 lb. of native-cured tobacco realized £1,792 thus trebling the previous year's output.

Vegetables, Fruit and Flowers.—Considerable quantities of vegetables and fruit were grown in Kiambu and the Iveti area of Machakos for sale in Nairobi, and from the former district a fair number of flowers came forward. In Fort Hall the Tuso Plum Growers threw away the chance of a good market by failing to

grade their crop properly. In Kiambu the acreage under smooth cayenne pine-apples again increased. The value of exports from these areas was £57,938, less than half the previous year's figure. 1,915,544 lb. of fresh vegetables, mostly cabbage, were exported to Mombasa from the Teita Hills. Bananas continued to be offered from the main coastal producing areas of Sabaki and Tana River and fetched as much as Sh. 4 per bunch in Mombasa. It was estimated that 5,000,000 oranges were sold in Mombasa during the year; lemon and grapefruit remained of poor quality. High winds damaged the mango crop but some lots of the recognized varieties fetched Sh. 30 to Sh. 40 per 100 to the grower. The new canning factory at Kilifi stimulated interest in pineapple growing. Total vegetable and fruit production in the Coast Province realized £107,500.

Wattle.—43,080 tons of bark worth £475,221 were received by the factories from African areas, whilst 12,321 tons valued at £111,635 came forward from European areas. The Uasin Gishu acreage again showed an increase and may be recorded as 45,653 as compared with 33,712 acres the previous year. Production in Rift Valley Province was 5,424 tons of bark worth £64,132. In Central Province, the high prices maintained the popularity of this product among African growers. For the first time the sale of undergrade bark was permitted, Meru wattle bark was reported to be the best quality product in the country. Central Province marketed 35,627 tons worth £364,270. In the African areas of Kericho district 120 tons of bark were bought and the industry is on the increase both there and in South Nyanza.

Wheat.—The average yield per acre remained steady at 5.37 bags (of 200 lb. each). This was calculated on a total acreage of 264,404 acres from which was reaped 1,421,744 bags of wheat as compared with 224,965 acres and 1,207,817 bags during the previous year. Of the total harvest, 102,401 bags were retained on the individual farms. In Rift Valley Province 58 per cent of the total arable land was under wheat which accounted for 59 per cent of the total value of the scheduled crops. The varieties 294 M and Equator were predominant. In Central Province 599 bags of African-grown wheat realized £882 and small patches were grown in Kericho and South Nyanza districts.

LIVESTOCK PRODUCE

Bacon and Lard.—Deliveries to the factories of pigs on the hoof increased during the year under review. Comparative figures were as follows:—

	1949	1950
Baconers	27,097	37,465
Porkers	12,490	14,166
Larders	2,331	4,663
Total	41,918	56,294

The amount of bacon and ham exported rose considerably to 16,323 cwt. valued at £157,418 from 2,345 cwt. worth £24,507 exported during the previous year. Interest in the feeding of pigs was maintained and encouraged by the improved marketing facilities.

Butter.—The creameries produced 6,472,161 lb. of butter which was a slight increase over 1949. 5,235,681 lb. were consumed locally leaving 1,236,480 lb. for export worth £156,403. The average payout for Grade I butter-fat was Sh. 2/46 per lb.

Cheese.—Total production amounted to 461,785 lb. 18,144 lb. valued at £1,712 were exported leaving 443,641 lb. for home consumption. Production was a fraction higher than during the previous year.

Clarified Butter.—Once again production in African areas rose whilst production in non-African areas fell. All was consumed locally. Comparative figures were as follows:—

	1949	1950
	lb.	*lb.*
African	671,112	846,180
Non-African	32,594	27,234
	704,066	873,414

Eggs.—Sales from Nyanza and Central Provinces were 66,269 gross valued at £46,521 which represented a decline from the previous year's figures of 88,114 gross and £67,523 respectively. 5,629 gross of eggs in shell were exported at a value of £6,993.

Poultry.—Sales from Nyanza and Central Provinces were 196,354 head, being a decrease of 87,885 head from the previous year. Numbers of poultry over three months old on European farms were 270,972 head.

Hides and Skins.—Exports during the year were:—

	Cwt.	*Value* £
Hides of cattle (shade-dried)	63,226	791,388
Hides of cattle (sun-dried)	10,711	111,745
Calf skins and kips (shade-dried) ..	720	5,937
Calf skins and kips (sun-dried) ..	192	1,319
Sheep skins and lamb skins (shade-dried)	12,294	148,459
Sheep skins and lamb skins (sun dried)	1,889	15,176
Goat skins and kid skins (shade-dried)	20,911	754,549
Goat skins and kid skins (sun-dried) ..	3,113	73,044
Other hides and skins	4,187	37,189
Total	117,276	£1,938,906

Apart from these exports many hides and skins were used locally.

Slaughter Stock.—The following comparative figures show purchases made by the Meat Marketing Board which is now known as the Meat Commission:—

	1949	1950
European cattle and calves	28,328	30,308
African cattle	49,229	23,930
European sheep and goats	30,859	23,827
African sheep and goats	100,978	82,939

Wool.—The amazing world wool prices had their effect on the comparatively small Kenya clip. Whilst the quantity exported only increased by 15.5 per cent the value increased by 120.5 per cent. Actual export figures were 11,865 centals (of 100 lb. each) valued at £208,661 as compared with 10,267 centals and £94,619 respectively during the previous year.

Livestock Population.—The following show the estimated livestock population at the end of 1950:—

European Farms—

Cattle, pedigree	6,816
Cattle, grade and native	614,403
Wool sheep	292,861
Pigs	60,664
Poultry	270,972

African Areas—

Cattle	4,500,000
Sheep and goats	6,000,000

PRODUCTION IN AFRICAN AREAS

The year under review was notable for a general air of prosperity which seems to exude from the main African Reserve areas; there were of course a few places which had to depend on food relief during varying periods throughout the year, but the majority of the African farmers enjoyed a prosperity somewhat above the usual expectations.

The two main reasons for this were firstly, the clement weather conditions and secondly, the higher prices offered for crops and produce of all kinds. As mentioned elsewhere the short rains were disappointing but for some time now that seems to have been the rule rather than the exception; full advantage was taken of the adequate long rains.

The individual crops have already been mentioned and will not be further discussed here but it should be noted that crop production as a whole was far greater than animal production when considering only the Nyanza, Central and Coast Provinces. Agricultural staff both European and African, were no longer merely engaged in organizing and encouraging soil conservation work, they were also actively employed in advising the African farmer on improved methods of agriculture the basis of which was ley farming with a suitable balance between crop and livestock and a rotation beneficial to the soil. There was every indication of the fact that such teaching was beginning to penetrate and was being accepted by the more progressive Africans. The primary object of increasing the yield per acre was again emphasized and it is indeed gratifying to all Field Officers concerned that no drastic fall off in yield per acre was recorded.

Many African farmers received considerable sums of hard cash for their produce, not only for their excess maize but also for the more specialized cash crops such as cotton, rice, coffee, tobacco, vegetables and fruit, wattle bark and, of course, the overnight boom trade in the ubiquitous sisal leaf deserves a special mention. Unfortunately little of this money was reinvested in the land from whence it was derived; apart from the fact that school fees were always a heavy burden, the tendency was to invest the remaining money in other types of business which would appear in theory to be more remunerative and give quicker returns. The African continued to regard his land as the means to an end rather than as the very foundation of his livelihood and well-being.

Table E gives figures for the three Provinces of the more important crops and animal products. These, of course, represent the surplus marketed after the requirements of the producer had been met and in several cases are but a fraction of the total production. Only crops marketed through the Maize and Produce Control, or which undergo produce inspection, are susceptible of accurate recording, others such as vegetables, fruit, etc., can only be estimated.

TABLE E—QUANTITIES AND VALUES OF MORE IMPORTANT PRODUCTS MARKETED (PARTLY ESTIMATED)

	Unit	Nyanza Province		Central Province		Coast Province	
		Quantity	Value	Quantity	Value	Quantity	Value
			£		£		£
Maize and Maize Meal	200 lb.	1,567,192	952,474	132,340	77,580	15,000	15,000
Millet and Sorghum	,,	49,951	35,269	11,840	8,775	—	—
Wheat	,,	1,815	1,609	599	882	—	—
Rice (Paddy)	150 lb.	20,040	18,643	—	—	15,000	30,000
Pulses	200 lb.	5,555	—	98,091	196,346	14,200	30,600
Potatoes	180 lb.	—	—	99,219	61,427	—	—
Cashew Nuts	Cwt.	—	—	—	—	11,115	6,625
Cassava	125 lb.	25,114	7,625	—	—	6,563	2,940
Chillies	Cwt.	—	—	—	—	1,691	9,470
Coffee (Parchment)	,,	295	2,587	834	14,973	—	—
Coffee (Buni)	,,	43		1,176	5,924	—	—
Cotton (Seed Cotton)	100 lb.	95,088	142,778	—	—	12,392	16,845
Cotton (Lint)	400 lb.	7,045		—	—	928	
Copra	Tons	—	—	—	—	1,183	43,973
Groundnuts	180 lb.	21,625	34,769	—	—	—	—
Sesame	180 lb.	700	1,125	—	—	—	—
Tobacco, Green Leaf	lb.	—	—	1,729,169	3,928	—	—
Tobacco, Native Cured	,,	—	—	874,976	32,900	35,840	1,792
Vegetables, Flowers and Fruit, including Bananas and Onions	Tons	—	—	5,321	81,628	7,600	107,500
Wattle Bark	,,	—	—	35,627	364,270	—	—
Ghee	36 lb.	17,999	—	561	1,658	—	—
Eggs	Gross	36,393	—	29,875	22,938	—	—
Poultry	Head	21,778	—	174,576	22,896	—	—
Fuel, Poles and Charcoal	..	—	—	—	74,687	—	—
Hides	36 lb.	94,201*	—	16,983	49,787	—	—
Skins	Score	50,603*	—	25,903	112,757	—	—
Miraa (*Catha edulis*)	Tons	—	—	15,600	11,700	—	—
Beeswax	36 lb.	—	—	434	2,543	—	—
Kapok	,,	—	—	—	—	3,888	2,450
Pyrethrum	lb.	—	—	56,773	2,861	—	—
Sisal Leaf	Tons	—	—	11,076	279,496	—	—
Sisal Fibre	,,	1,250	125,000	4,961		—	—

*Number

PART II—POLICY AND WORK OF THE DEPARTMENT OF AGRICULTURE

GENERAL

Much has been written and still more has been said about the serious deterioration in the fertility of our land and of the abuse it has suffered. Daily one hears of the slow progress made in the adoption of better farming practices and the question is asked: "Why can't we obtain the general adoption of sound mixed farming principles that will maintain and improve the fertility of our soils?" It should be remembered that agriculturally this country started from scratch only half a century ago. In the European areas, settlers were confronted with new crops, new soils, new growth conditions, new pests, new diseases, primitive communication and marketing facilities and, until recent times, only a shadow of technical and research services. In the African areas pestilence and famine were rampant and tribal wars and strife made any form of settled agriculture impossible. During this development period of fifty years the country has suffered from the effects of two world wars and serious periods of depression. It is doubtful whether ever before in history so much progress has been made in so short a time. Too seldom is homage paid to those early pioneers both settlers and technical officers, and recognition given of the tremendous contribution they made to our rapid development.

Even to-day how few answers and solutions we can offer to problems of fundamental importance in the evolution of sound farming practices. Kenya is not the only country that has been starved of research and investigational facilities. Even in the United Kingdom, where settled agriculture has been practised for centuries, adequate recognition of research needs has only been given in very recent times. It is most gratifying to record that towards the end of the year under review a capital grant of £218,000 was received from Colonial Development and Welfare Funds for the general improvement of research services. This grant will make possible the provision of a new research laboratory on the site of the present Scott Laboratories and in this connexion it is of interest to record that the Agricultural Commission of 1929 recommended "in regard to the Scott Laboratory the Commission recommends that an entirely new range of buildings should be provided as early as possible".

There are of course problems other than technical ones to be solved and which have an all-important bearing on the pattern of agricultural development. They are of special significance in the native lands. They are mainly sociological in nature but particularly important is the question of land tenure. In the more progressive areas of the native lands, where it has been possible to give concentrated guidance and supervision by European staff, enclosure is taking place at a rapid pace. The value of animal products is appreciated, as distinct from regarding animals as symbols of social status, rotations are practised, pasture is managed and cash crops are taking their proper place in the farm economy. These people are individualists and the natural evolution seems to be that the more progressive will slowly accumulate more land and more wealth and that the eventual pattern of development will be a land-owning class employing paid labour. As these larger holdings develop with secure titles the necessary credit facilities can be made available to ensure desirable development. We are now in a transition stage and it is considered that steps must be taken to make this natural evolution possible and prevent the progressive fragmentation which will otherwise take place and which would undoubtedly lead to disaster.

Later in this report reference is made to group farming in Nyanza Province. Deliberately we are proceeding slowly with this. If we attempt to introduce too many or too radical changes into the family and social structure we court disaster. Policy at present is to obtain acceptance of the group to common soil conservation measures and a few common services. If and when this position is consolidated

and working happily additional beneficial practices or services can be introduced. It must be remembered that the ties which led to communal effort in Africa are fast disappearing.

Mechanization is frequently advanced as the answer to Africa's need for greater and more efficient agricultural production. Africa must catch up with the times! According to a recent survey by the Food and Agricultural Organization more than 85 per cent of the total draught power used in farming operations in the world to-day is provided by work animals. Even to-day in our African areas, the wheel is an imported and not an invented aid. Is it wise to attempt to jump to this modern age of intricate and delicate mechanisms? There may be a few Africans in selected areas who could reap advantage from modern machinery but I believe the day is still far off when there can be any wide application. One of our main objectives to-day is to regain some of the lost fertility of our soils. Present-day belief is that fertility and soil structure can best be rebuilt through a system of grass leys and balanced mixed farming. Grass is our most important crop. To get the African to accept this, grass must show some return and it follows that the African must be convinced that stock, and cattle in particular, are economic assets. One obvious way to achieve this is to demonstrate the economies resulting from the use of cattle for draught purposes. It is considered therefore, that the objectives stated above can best be attained, not by the introduction of tractors and the modern devices that go with them, but by proceeding at Africa's fastest pace and giving every encouragement to the greater use of the wheel and of draught oxen.

In the European areas the progress of the majority reported last year, continued at a most heartening rate. Unfortunately the persistent minority, who place their own interests before that of the land, is still with us. The improved prices for agricultural produce and the measure of stability given by the much maligned system of Government controls and guaranteed prices, has undoubtedly made possible many of the permanent and essential improvements that are now taking place. The demand for the services of the Soil Conservation Units far exceeds the capacity of the units and, a most encouraging trend, are the requests, which again far exceed our resources, for the preparation of farm land utilization plans coupled with long-term cropping and management programmes. The adoption of these plans and programmes will undoubtedly mean that less mechanical soil conservation will be necessary than in unplanned areas. Whilst we must at this stage plan only at the request of the farmer and attempt to plan according to his wishes, the ultimate aim must be co-ordinated planning of catchment areas on the lines of the existing Rongai Valley drainage scheme. Similarly in African areas our efforts must be directed towards the planning of land utilization by topographical units.

We are still distressingly short of specialist officers and of fully-trained agricultural officers. The need is for increasingly better trained officers. Experience here suggests most strongly that the Colonial Agricultural Service has lost much of its former attraction. Twenty years ago, when opportunities in the United Kingdom were few, the Colonial Service was financially twice as attractive; to-day when opportunities in the United Kingdom are plentiful the financial attraction has been removed by the improvement in terms for the Home Service. If the present and future development of this Colony is not to be retarded consideration must be given to ways and means of attracting the cream of the output from British Universities; we should not be content with second best. In the European areas we are quite unable to satisfy the demands for research and technical services and experience in African areas clearly shows that concentrated European guidance and supervision pays large dividends. By the provision of three training centres steps have been taken to improve the quality of African supervisory staff, but the general educational level of the entrants is so low that, despite the promising indications that this will shortly show improvement, it will be many

years before the extension and advisory services can be safely entrusted to African staff. This is not said in criticism of the present staff, both European and African, who have, in their short numbers, made valiant efforts to close the gap, but it is recorded in order to emphasize the fact that however well framed and desirable a policy may be it cannot be fully implemented unless staff in adequate numbers and of the right calibre is available.

EXPERIMENTAL WORK

Plant Breeding

Plant breeding and the testing of introduced varieties of a number of crops is carried out at the Plant Breeding Station, Njoro (7,100 ft.), and at sub-stations at Molo (9,300 ft.), Ol Joro Orok (7,800 ft.), Rongai (6,000 ft.), Kitale (6,000 ft.) and the Scott Agricultural Laboratories (5,700 ft.).

Cereals

Wheat.—The value of the work done by the Plant Breeding Station is indicated by the fact that in 1950 upwards of 70 per cent of the acreage under wheat in Kenya, and over 90 per cent of that in the Northern Province of Tanganyika, was seeded to varieties produced by the station. A ninth physiological form of black stem rust, *Puccinia graminis tritici* has now appeared to which all except one of the commonly grown established varieties are susceptible. Six new wheats were released to farmers from Departmental control and a further number are under trial and multiplication. A large number of new introductions are under test, many new crosses were made and fixed hybrids were promoted to the yield trials at Njoro, Rongai, Ol Joro Orok and Molo.

The aim at the latter two stations is the production of varieties suited to a cooler and longer season climate and possessing resistance to yellow ear rust, *Puccinia glumarum.* Pelschenke Wholemeal Fermentation tests were carried out on all new hybrids as a routine measure and samples of advanced hybrids were sent for baking quality tests to the Nairobi laboratory of Messrs. Unga, Ltd.

Barley.—It has not been a good season for malting barley due to poor rains which produced hard and steely samples. The Australian two-row barleys, Prior and Research with Glacier from America, are the main varieties grown. No hybridization has so far been carried out with barley and the programme has as its aim the introduction and testing of varieties for suitability to the various altitude ranges over which the crop is grown. In the high areas resistance to *P. glumarum* is essential. A number of new introductions were under test in observation plots or yield trials at Njoro, Rongai, Ol Joro Orok and Molo. In the yield trials the Danish barley, Ymer, and the American varieties, Compana, Hannchen and Trebi did well; Peatland proved outstanding in the observation plots. The new Cambridge barley, Prefect, shows promise of being a successful feed variety for the higher areas.

Oats.—As with barley, work is confined to trials of introduced varieties. Most varieties, particularly those from Europe, are too susceptible to rust to be released to growers, but some from America and Canada are showing more resistance and trials with them are continuing. The Australian variety, Lampton, still remains the standard for hay and feed with Grey Algerian as the recognized milling oat.

Maize.—Work is proceeding at Njoro, with the object of developing hybrids suited to the higher and cooler maize-growing areas of the Colony; at Kitale to produce hybrids suited to hotter, wetter conditions and resistant to White Blight, *Helminthosporium turcicum,* and at Rongai to cover hotter and drier conditions. The breeding programme is following two main lines: (1) continuation of work initiated before the war but interrupted by it; (2) starting a new programme using

both local varieties and also, in order to obtain genetic diversity, hybrids and inbreds from the U.S.A., Southern Rhodesia and South Africa. It has been repeatedly shown that introduced, ready-made hybrids are not successful in Kenya and the production of hybrids suited to local conditions must be done in the Colony. Inbreeding of the various lines continued, top crosses of inbred *x* variety were made on selected new S.1's for testing general combining ability and further plants in open-pollinated field maize selected and inbred. Yield trials were conducted with the single crosses made in 1949 from the pre-war inbred lines and further single and double crosses in this material were made for yield tests next year. Work was also continued with Dr. F. C. Harland's intra-genotypic method of maize improvement. The Maize Seed Competition, which aims at improvement of yield by seed selection, was again sown at the three centres Kitale, Njoro and Rongai.

Sorghum.—The sorghum breeding programme aims at the improvement of local varieties for African use and the production of dwarf types suitable for combine-harvesting, for cultivation in the European areas. A collection of local varieties is being built up and imported varieties, particularly dwarf types from the U.S.A., are being tested. If the latter are not immediately suitable for Kenya, it is expected that by hybridization with local types it will be possible to develop high yielding, disease resistant varieties suitable for full mechanization.

Sunflowers.—The semi-dwarf varieties, Mars, Jupiter and Pole Star, have been shown to yield as heavily as the commonly grown variety Giant Black provided they are spaced more closely than the latter, but while suitable for combining in the lower, hotter areas they grow too tall in the high rainfall areas over 7,000 ft. Single plant selections for dwarfness were made in the breeding plots of these varieties, and also in plots of three fully dwarf varieties, Klein, Southern Cross and Mennonite, which were under trial for the first time.

Other Work.—Trials were conducted, or observation plots planted, of introduced varieties of Soya beans, dwarf castor beans, oil poppies, oil rapes and okra. Nine large-scale rates of seeding trials with various varieties of wheat in different places confirmed the general results of previous experiments that seedings of less than 50–70 lb. per acre reduce yields, but above this figure, yields remain fairly constant up to the highest sowing rate used, 150 lb. per acre. A trial to determine the effect of two rates of seeding (70 and 150 lb. per acre) and muriate of potash on three barley varieties showed that neither of these factors affected yield, bushel weight or nitrogen content of the grain. An experiment in which sulphate of ammonia was applied at various times to wheat following ploughed-in stubble did not give significant results.

Coffee

Good progress was made by the entomological section in studies on the use of some of the newer insecticides in coffee. Indications have been obtained that D.D.T. applied in sprays to control *Antestia,* capsids and thrips, may have a serious effect on biological control and there is increasing evidence that the use of such insecticides on a crop such as coffee, which has a vast complex of associated insects, raises difficult problems. While the use of such insecticides should be avoided where possible, there are circumstances in which they must be used and therefore work is continuing in order to determine how best to use them, so that the least possible interference with natural enemies results. Preparations were made for a visit to Uganda early in 1951 in order to continue the introduction of further parasites of the coffee mealy bug. Much time was taken up with advisory work as there were serious outbreaks of a number of pests, amongst which the following were particularly troublesome: thrips (*Diarthrothrips coffæ,* Williams), coffee mealy bug (*Pseudococcus kenæ,* Le Pelley), white borer (*Anthoris leuconotus,* Parc.), lacewing coffee bug (*Habrochilla placida,* How.).

The main work of the Plant Pathologist/Physiologist has been the investigation of leaf fall and copper spraying. The effect of copper spraying at different times of the year on leaf life and leaf fall has been followed at the Scott Laboratories, Nairobi, and in the Solai district. At the former place maximum supression of leaf fall was obtained by March and May sprayings, while spraying in July, September or November had little or no effect. In Solai maximum supression of leaf fall, during the one period when it occurs (September to January) was obtained by spraying in July. The experiment on leaf fall and crop response to both copper and non-copper fungicides was continued. Over three years the only treatment significantly different from control in cherry weight was Bordeaux and this only reached the 5 per cent point and was entirely due to the 1950 yields. Leaf fall caused by mealy bug attack complicated the trial this year.

The effect of maleic hydrazide sprays on growth and assimilation has been tested and while growth was inhibited to some extent there appeared to be no effect on assimilation. Work is continuing as, if a more marked reduction in growth could be obtained without reducing assimilation, it might be of value in the West Rift area where vegetative growth appears to compete with flower and fruit formation. A further inquiry into the cause of "onion" flavour confirmed that prolonged contact with water, either during pre-washing or during fermentation is liable to encourage its production. The causes of "bricky" flavour were investigated and there it little doubt that it is associated with the use of a number of benzine hexachloride insecticides.

The soil science section continued combined field and laboratory studies of the build-up and preservation of soil structure by mulching, manuring and resting under Napier grass, together with the changes produced by cultivation implements. In furtherance of the study of the nutrition of the coffee bush, an additional field trial was put down to observe the effects of higher rates of application of nitrogen, phosphate and organic manure, and combinations of mulching with manuring and fertilizer dressings were introduced into two factorial field trials. So far, outstandingly beneficial results have been obtained by mulching with Napier grass, and economic responses have resulted from applications of nitrogenous fertilizers over a short period but need confirmation over a longer term. Phosphate, even at high rates of application, has had no beneficial effect. Potash and lime have been checked only by soil analysis and limited observation strips: they are unlikely to be required but should be studied in field trials in due course.

Fruit and Vegetables

At Molo, trials continued with a number of varieties of apples, plums, pears, peaches and apricots on various stocks, with soft fruits and with vegetables. The outstanding apple variety at present is Blenheim Orange which, on Cape seedling stock, makes vigorous growth and yet crops early, but it is unfortunately susceptible to Bitter Pit and internal breakdown of the fruit. Pronounced differences in ease of rooting have been observed between five Malling rootstocks which are being multiplied. Of a large number of plum varieties under trial, Apricot, Jardine's Early, Methley, Settler, Shiro, Tazagine and Wilson have all given good crops. Peaches do not appear to be well adapted to the Molo climate and apricots suffer badly from physiological fruit cracking. Further work on the use of oil sprays for breaking prolonged dormancy in deciduous fruit trees showed that it is very beneficial for plum varieties which are classified as being susceptible to prolonged dormancy, but with resistant varieties beneficial effects on young trees may possibly be followed by reduced yields as the trees get older.

Work aiming at the improvement of Kenya strawberry stocks continued. The variety Royal Sovereign M.40, which showed early promise at Molo, has now proved a failure owing to its susceptibility to strawberry leaf spot. Crosses between this variety and Melba, which is resistant to leaf spot, have not resulted in

viable seed. Huxley M.44 is the most promising English variety yet imported. Selections are being made from seedlings derived from two American hybrid strawberries. Imported raspberry varieties have not so far shown much promise, but youngberries have been very successful. Several trials were made with five varieties of peas for seed, the varieties Shasta and Perfection Freezer proving satisfactory. Small varietal trials were also conducted with garden peas, beans, carrots and onions.

The development of the Matuga station, near Mombasa, for tropical and sub-tropical fruits continued. Successful results were obtained in preliminary work on topworking of citrus, with the object of producing good fruit from the many trees on Arab holdings which yield bitter fruit. Experiments were started on the propagation of pineapples from cuttings in order to speed up the multiplication of planting material, which is in very short supply; variety trials were conducted with tomatoes, onions and beans, and observation plots of numerous fruits have been planted.

Grassland

For some years past facilities and staff have only been available for pasture research work on any scale to be undertaken at Kabete and by means of co-operative experiments on farms, but during the year three more pasture research officers have been recruited, one of whom has begun the development of a regional grassland station at Kitale, while the other two are for the time being working at Kabete and Ol Joro Orok pending the siting and development of further stations.

Work at Kabete proceeded on the same lines as formerly, namely (*a*) experiments on the management of certain types of natural grassland, which yielded no notable new results during 1950, and, (*b*) experiments on individual pasture species with a view to ley establishment and with fodder crops. A trial with Rhodes grass in mixture with six legumes showed that, under Kabete conditions, only lucerne and *Glycine javanica* persisted moderately well, the latter withstanding severe clipping as well as lucerne. This has been followed by a new trial which includes Rhodes grass and *Bothriochloa insculpta* planted alone, together and in mixture with lucerne and *Glycine,* but no results are yet available from this experiment. Another new trial compares the performance of four grasses which have now successfully passed preliminary testing (*Pennisetum stramineum, Cenchrus ciliaris* (erect form), *Setaria* sp. ex Nandi and *Melinis minutiflora* (Chania strain) with two species of known value, Rhodes and *Bothriochloa insculpta. Indigofera retroflexa* has been found to be a promising pasture legume and is now undergoing more extensive trial in mixture with Rhodes Grass, while a perennial *Dolichos* sp. ex Kilima Kiu, is showing great promise, having the ability to grow and remain green during the dry season. The seasonal digestibility of certain grasses was studied: it was found to follow rainfall with a time lag of about two weeks, to vary between 60 and 80 per cent, and to differ little between the species studied.

At Ol Joro Orok the evaluation of a number of grass species both in clipping experiments and under the grazing animal has begun. As the main limiting factor at Ol Joro Orok over a large part of the year is soil moisture, experiments have been planted to observe the effect of row planting on establishment and productivity, and distinctly promising indications have been obtained. Row planting of Kentucky 31 fescue gave better establishment, subsequent growth and higher seed production than broadcasting and at the same time economized seed. Here, and at other higher altitude stations, trials of temperate grasses and legumes indicated that Cocksfoot, Kentucky 31 fescue, Hunter River Lucerne, subterranean clover, serradella and smooth burr clover are promising. Rye grass shows a tendency to revert to a stemming, heavy seeding type which may become a serious weed and this matter is being investigated.

Pyrethrum

Breeding.—Work on the production of improved strains of pyrethrum suitable for different altitudes, was continued at five stations: Rongai (6,500 ft.), Subukia (7,000 ft.), Ol Joro Orok (7,800 ft.), Molo (8,300 ft.), and Marindas (9,000 ft.). Over 600 new single plant selections were made and planted in progeny rows for testing, 38 new crosses were made, and seedlings from earlier crosses were tested in six variety trials. The objective of increased yields of pyrethrins per acre may be approached by increasing the yield of flowers per acre, by improving their pyrethrin content, or by a combination of both processes. Studies on selections have, however, shown that there is a significant negative correlation between yield of flowers and pyrethrin content. In an attempt to overcome this difficulty an exceptionally vigorous but low content strain (bred by Mr. G. S. Powell) was crossed with 13 high content clones. The result has been to produce plants combining moderately good content with increased flowering vigour and as the latter more than compensated for the former, yields of pyrethrins per acre were about 50 per cent higher than from crosses between two high content parents. The Powell crosses will probably be most suitable for medium altitudes. Individuals which combine both good qualities are now being sought within the bulk plots of the various crosses.

Irrigable seed production plots of the cross 188 x 214 were planted and the first seed issue of this strain, which is suitable for low to medium altitudes, will be made towards the end of 1951. Seed production from the strain "1970 Control", for medium altitudes, is also under way. The performance of two strains, 127 x 481 and 127 x 468, at the Molo station, gives promise of improved material for the higher altitudes, and steps have been taken for bulk seed production of the former.

Bud disease (*Ramularia bellunensis*).—Study of the incidence of the disease on plots of a single clone established on 33 farms distributed over the pyrethrum-growing area showed that the percentage of flowers affected in districts West of the Rift Valley was again about double that occurring east of the Rift. This provides further evidence that environmental factors play a part in determining disease incidence, but little progress has been made in ascertaining the particular factors in the environment which are important. Two spraying trials again failed to reveal any significant effect from fungicides, but the incidence of the disease was low in both experiments. There is evidence that some strains are resistant to bud disease, but proper testing cannot be done until means of producing an artificial epidemic is found.

Other experimental work includes trials on rotations, fertilizers, green manures, methods of picking and spacing, etc. In a long-term rotation experiment at Ol Joro Orok, soil which had been under grass for three years showed better structure and higher nitrogen content than that which had been under pyrethrum for the same period, but this is not yet reflected in decreased pyrethrum yields. Fortnightly selected picking of flowers was compared with stripping all open flowers, irrespective of stage of maturity, at intervals of two, four or six weeks, and it was found that over the whole season the saving in labour costs by stripping was small compared to the value of the pyrethrins lost. An interesting observation arising from this experiment was that with at least one clone the pyrethrin content of the flowers does not vary greatly from opening to maturity, which is contrary to previous general experience.

Chemical investigations carried out at the Scott Laboratories, Nairobi, were mainly concerned with methods of analysis and the loss of pyrethrins in storage or transit. Transit losses in 1950 were very considerable and work was started to determine the cause thereof and to find possible control measures, but it is too early to draw conclusions from this work.

Sisal

The old spacing and cutting trials at the Sisal Research Station continued to show that yield increases with the plant population per acre and that an early and light first cut is better than heavy or delayed cutting. The management of the sisal plant is being studied under varying conditions of soil and climate by five complex external trials which cover the four factors of plant density, spacing time of first cut and intensity of cutting, but as none of these trials have yet reached the cutting stage no results are yet available. A trial comparing bulbils from nurseries with suckers from old and new areas, together with deep and shallow planting is so far indicating the bulbils are better planting material than suckers and shallow planting better than deep. Two new experiments of this nature were planted; one to compare bulbils planted directly in the field with nursery plants and suckers, and the other to investigate the possibility of increasing efficiency by using layer nursery plants and an earlier first cut than is normal in Kenya. Another new trial is designed to investigate the effect on the soil and sisal of continuous clean weeding with and without grass strips between the sisal rows.

Two experiments showed that bulbils in the nursery respond to a mulch of sisal waste and also to sulphate of ammonia and sisal waste compost. A new trial was begun to test all combinations of N.P.K. compost and sisal waste mulch. Two other new trials were planted in order to assess the effect of fertilizers and sisal waste in the field. Experiments to determine means of correcting various deficiency symptoms are indicating that relatively high rates of application of potash may be required to control banding disease and that a particular type of leaf tip dieback is reduced by lime and superphosphate alone or in combination.

SCOTT AGRICULTURAL LABORATORIES

Chemical Section

Results of a large number of fertilizer experiments in the Kenya Highlands have shown that on most soil types many arable crops respond markedly to "readily available" phosphatic fertilizers and that superphosphate produces greater responses than the locally manufactured soda phosphate. On the other hand pot experiments conducted in 1949 indicated that the early uptake of phosphate by grass and cereal seedlings was about the same from superphosphate and soda phosphate, that the uptake from soda phosphate continued longer, and that the growth effect of the two fertilizers was similar provided that the plant roots were not confined to a medium containing a high concentration of fertilizer. Phosphate uptake from soda phosphate decreased when the soda phosphate content of the medium exceeded the equivalent of about 0.4 per cent citric soluble P_2O_5 whereas uptake of superphosphate continued to increase up to the highest concentration used—5 per cent. Further pot culture trials in 1950 have investigated the effect of different methods of placement, and of varying the concentration of soda phosphate within the fertilized zone, on the efficiency of this fertilizer. These trials have confirmed the finding from previous pot cultures that soda phosphate is at least as effective for certain young gramineous seedlings as an equivalent quantity of superphosphate, but have provided further evidence that a high concentration of soda phosphate in the fertilized zone can depress phosphate uptake and through this may lead to lower yields. The longer availability of soda phosphate noted in the 1949 pot experiments was not observed in the single trial in which this factor was studied in 1950. In an unreplicated field trial started in October, 1948, to observe the residual effects of Uganda rock phosphate, soda phosphate and superphosphate on Rhodes grass, a marked residual effect from all treatments, particularly soda phosphate, was observed six months after fertilizing, but in 1950 the only residual effect observed was a small one from soda phosphate.

A good deal of preliminary work was done on the effect of resting land under various soil covers, especially grass leys, on soil fertility characteristics. The examination of soil structure in samples taken from plots which had been under

various species of grass for several years at Kitale failed to reveal any significant differences between the effects of different grasses. Observations on the growth of various crops in the first season after breaking a Rhodes grass ley did not yield conclusive results, and a more critical experiment incorporating different times of breaking the ley and various fertilizer treatments is planned for 1951. A long-term experiment to compare the fertility building effects of Rhodes grass, Napier grass, Kikuyu grass, Kudzu as a perennial leguminous cover, sunn hemp as a seasonal green manure, and natural regeneration, was begun.

A detailed investigation was made of the distribution of the major elements within the sisal leaf, and the influence which the position of the leaf on the plant, and the age of the plant, has on this distribution.

Entomological Section

Experimental work on the protection of stored grain has continued and a number of statistical trials have been in progress with B.H.C., D.D.T. and pyrethrum, used at several rates and with various diluents. The majority of these trials are not yet finished, but some interim results are now available. Under the conditions of these experiments, B.H.C. has proved the most effective insecticide; pyrethrum has given somewhat variable results; pyrethrum mixed with diatomite being better than pyrethrum alone. The impregnation of ordinary jute bags with pyrethrum and synergist substances was not effective.

Severe damage was done to seedling cereals in the Ol Kalou—Ol Joro Orok area by a number of beetles, the most injurious of which was *Heteronychus consimilis,* and a special study of the insects concerned will be made in 1951. The control of *Odontotermes badius* with toxic B.H.C. smoke, using the "Gammexane" smoke generator No. 12 and pressure applicator was further tested and found to be very satisfactory. Experiments on the control of the Jacaranda bug (*Orthezia insignis*) with both contact and systemic insecticides showed some promise. The ladybird beetle, *Hyperaspis jocosa,* parasitic on the Jacaranda bug, which was introduced some years ago by the Forestry Department, can still be found in the field but has not been an important controlling influence up to the present; mass breeding and large-scale liberations are to be tried. In July there was an increase in the population of several indigenous grasshoppers, especially *Gastrimargus brevipes* Sjost, and *Caloptenopsis meruensis* Sjost, resulting in severe damage to the grass in the Elmenteita area. The unusual distribution of rainfall early in the year was probably responsible for this attack and also for the unusually severe damage to grass by several Coleoptera, especially *Epilachna hirta,* which occurred over a wide area in the Rift Valley. A severe attack on young seedling wattle and seedling maize by an undescribed species of *Nematocerus* developed at Eldoret, Sergoit and Moiben in April. Baiting with B.H.C. and green maize, which was found successful last year, was impracticable, but a bait of couch grass, molasses and B.H.C. proved successful, and later the substitution of Kikuyu grass for couch was found to be an improvement. A survey showed that Rhinoceros Beetle (*Oryctes monoceros*) was causing appreciable loss of palms and reduction of the coconut crop in the Coast Province and a "clean up" of dead and dying trees, etc., was enforced in several districts, beneficial results becoming apparent by the end of the year.

Plant Pathology Section

Work continued on the testing of new wheat varieties for stem rust resistance, and the recent appearance of the rust forms K8 and K9 necessitated the re-testing of a number of hybrids which had hitherto proved to be immune or resistant to the previously occurring rust forms. The resistance of some established varieties to form K1 has apparently broken down, suggesting an increase in virulence of this form or the occurrence of a new form close to K1. The impermanence of the rust position is also emphasized by the fact that there is now evidence of the emergence of yet another new form, K10, which is being investigated.

Blight resistant potatoes, which have been supplied by Dr. W. Black since 1943, were multiplied during 1949 and in 1950 six varieties were planted both at the Scott Laboratories and on a farm at 8,500 ft. where blight is usually much in evidence. All six varieties had previously shown immunity to blight, but this year, on the farm mentioned, all were attacked except 1512 d.4 which is immune from biotypes A, B, C, E and F. It seems that those immune to A, B, E and F were attacked by biotype C, and the A, C immunes were attacked by the new biotype E, which was first imported from Tanganyika, but the results could not be confirmed at the Scott Laboratories as no blight appeared there. The variety 914 a.12 (Craig's van Riebeck) proved to be the heaviest cropper in spite of blight. During the year, *Phytophthora infestans* (strain C, identified by Dr. Black), was found on the foliage of woody perennial *Solanum* species, *S. indicum, S. panduræforme* and *S. incanum,* which abound in widely separated localities above 6,000 ft. The fungus from *S. incanum* readily infected potato foliage and tuber slice and was transferred from potato to *S. indicum.* The presence of these perennial hosts presents a permanent source of infection to the potato crop and may offer scope for the evolution of even more aggressive strains of the fungus.

The Senior Plant Pathologist collaborated with the Senior Agricultural Officer (Pyrethrum) in work on pyrethrum bud disease which has already been mentioned under "Pyrethrum". Numerous other diseases on a variety of crops were also investigated, amongst which there were two which were recorded for the first time in Kenya—"Black Rot" of cabbages (*Xanthomonas campestris*) and a disease of pineapples resembling "Brown Speck" from which *Penicillium* sp. and *Fusarium Scirpi* were isolated.

At the Seed Testing Laboratory several investigations were undertaken in addition to routine work. In testing the effect of storage period and temperature on chicory seed it was found that viability was unaffected by 12 months' storage at room temperatures or by 14 days' storage at 60° C., but over the shorter period, was reduced by a temperature of 80° C., while 100° C. killed the seed. Storage at 0° C. or 10° C. for periods of up to eight weeks slighly reduced germination percentage as compared with storage at room temperature. Tests of seeds of the grasses *Brachiaria brizantha* and *Panicum maximum* showed, under laboratory conditions, that even ripe seed only germinated irregularly and with the latter species germination never exceeded 3.75 per cent. Treatment of pyrethrum seed with Agrosan or Fernasan showed that the latter slightly increased germination while the former had a slightly depressing effect.

FIELD SERVICES

Extension Work

Our aim in the districts, both European and African, continues to be the development of sound farming practices without which soil control measures will yield no lasting reward.

There are a number of deterrents to the rapid adoption of mixed farming practices in the European areas and among these may be included existing capital commitments in specialized machinery for cereal production, the further capital outlay in water, fencing, building and stock that would be required and the specialized knowledge required to establish and manage grass leys in areas where our knowledge is still limited and on lands which have become worn out from long arable usage. Nevertheless, definite advances can be recorded in the planning of farms which was advocated last year, particularly in Nakuru district, and in the establishment of grass leys in Trans Nzoia. Limited technical knowledge among the farming community is more than offset by an above-average ability to appreciate sound agricultural instruction. In addition to the large numbers of farms visited by officers on advisory work, Young Farmers' Clubs have been run successfully in the Trans Nzoia and Nakuru districts. Farmers' days were

organized in many districts on farms and at experimental stations while departmental exhibits were a feature of the Nakuru Show. To this conducted parties of the more progressive African agriculturalists were brought from the Provinces to glean useful information and instruction.

In Nyanza Province increasing use has been made of rewards and assistance from African Betterment Funds to farmers who adopt improved practices such as a good rotation with a resting fallow suitably supported by physical soil control and the manufacture and use of farmyard manure or compost according to the availability of cattle. It has proved more difficult to put across to the African the limitation and correct utilization of livestock but in Central Nyanza a most successful venture was the castration of 26,492 bulls culled from herds in this district. The rotational grazing of common pasture lands in Kericho is understood and accepted by the Kipsigis and is an improvement on the system of block closure, examples of which occur in all districts. A system of rough and ready paddocking has also gone ahead in Kericho and an attempt is being made to improve the husbandry system there. Less progress can be recorded in the semi-arid zone which is fundamentally ranching or semi-ranching country, generally suffering from over-population and over-stocking and where, in a primitive way, farming is at present too intensive.

First phase group farming, whereby lateral continuity of narrow base terraces, trash lines or uncultivated strips, of ploughing or cultivation and of cropping is achieved, was extended in the Upper Kano and South-Western Divisions of Central Nyanza and in the Northern Division of North Nyanza. Where land is split up or irregular in shape, second phase group-farming aims to reallocate the family holdings so that each family retains the same size of holding but has a plot of equal size in each of the lateral fields of the group. Only four second phase group farms were started in 1950 besides the four in the Belgut Division of Kericho. Progress is deliberately slow and the size of group farms must be manageable. In many instances, owing to soil heterogeneity and individualism, it is preferable to encourage the development and improvement of consolidated family holdings and this is being fostered all the time by officers in the field.

In the Central Province steady progress has been made in the direction of improved farming, particularly in Nyeri district, undoubtedly due to intensive staffing. The value of grass is much more widely appreciated and a large increase in paddocking has taken place. The organized sale of milk has provided an outlet for the products from the areas laid down to grass. Another incentive to improved farming has been the development of high-priced cash crops including coffee, pyrethrum and, in Nyeri, tea. In all districts the practice of applying manure is on the increase. The demand for manure in each of the Kikuyu districts is immense and, as the price of imported goat manure from the Masai rises, cultivators are turning their thoughts more to the local product. The number of cattle sheds in use is expanding and in both Meru and Fort Hall the compost making schemes turned out very useful organic manure. The most important single obstacle to better farming is the present system of land tenure and fragmentation of holdings, the agricultural census revealing cases where a cultivator possessed as many as 25 holdings, 20 miles separating the most distant from the homestead. Every incentive must therefore be given to the development of the economic holding and security of tenure. It is in such holdings that the best examples of paddocking, manuring, bench terracing and the development of cash crops and improved stock management can be found. In the lower areas of Meru and Embu and the semi-arid districts of Kitui and Machakos conditions are less favourable for the development of a sound farming system while our knowledge of sound methods of cultivation and of drought resistant crops acceptable to the African farmer is still rudimentary.

In the more primitive conditions pertaining at the Coast, attention is devoted to the expansion of drought resistant crops such as cassava, sweet potatoes and

sorghum to assure food supplies. Encouragement is being given to manuring and to soil conservation measures while a number of schemes were initiated to improve communications and water supplies in the Coast Hinterland to draw off surplus population and livestock to give relief to the Digo and Duruma lands. Although interest in the development of the Coastal strip continued to be maintained, the fact remains that far too much land in the Protectorate belongs to absentee landlords awaiting a speculative rise in values. This is particularly apparent in our efforts to clean up coconut plantations against the ravages of the Rhinoceros Beetle. Nevertheless a vigorous campaign under the Coconut Preservation Ordinance met with appreciable success and nurseries were started to replace the thousands of coconut trees killed by this pest annually.

In the African districts of the Rift Valley Province good progress with the management of grazing lands in the higher and better grazings is recorded whereby a system of open and closed grazings, providing rest periods for the grazings, was adopted in a number of areas. The restriction of grazing to specific portions of open grazings was a notable advance. A beginning has been made with the fencing of holdings and paddocks in Nandi while in Elgeyo and Baringo encouragement has been given to the traditional grouping of holdings for cultivation and rest under grass or bush fallow.

In the African districts successful agricultural shows were run on a Provincial basis at Kilifi on the Coast, on a district basis at Nyeri, Fort Hall and Kiambu in the Central Province and in Nandi and on a locational basis in Nyanza Province at three centres where the livestock side was particularly and purposely stressed.

Soil Conservation Service—European Areas

This was the first year that the six mechanical terracing units operated to full capacity and, supplemented to a certain extent by farmers own machinery, during the year 20,641 acres were protected with broad base, V, narrow base and bench terraces or with diversion ditches. Nevertheless the rate of terracing does not keep pace with the annual increase of acreage brought into cultivation, while the total area of cultivated land which will ultimately require protection falls little short of 600,000 acres in the European Highlands alone. It is not at present possible for financial reasons to increase the number of terracing units. Charges to farmers for soil conservation work during the year recovered about 32 per cent of their cost, the remaining 68 per cent being borne by Government.

Acreage Protected by Broad Base Terraces

District	1941–47	1948	1949	1950	Total
Trans Nzoia	13,398	2,836	2,826	4,563	23,623
Uasin Gishu	5,740	1,460	2,159	4,250	13,609
Nakuru	21,062	2,860	2,771	4,586	31,279
Thomson's Falls ..	1,481	1,314	636	2,304	5,735
Nyanza	972	1,011	838	1,059	3,880
Nairobi	660	—	76	221	957
	43,313	9,481	9,306	16,983	79,083

While certain mechanical breakdowns are inevitable and time is lost awaiting spares, servicing facilities were improved by the building of a new District Workshop at Nakuru in addition to those at Kitale, Eldoret and Thomson's Falls. The two main factors restricting the full use of machinery are the annual rains and the close season when the land is completely planted to crops, units being routed to move on to the wheat lands after the early planting of maize. Although this interval provides the opportunity for the annual overhauls of tractors and machinery, some three to four months of terracing are lost in this way.

The main items of building undertaken during the year included four European houses, 19 African quarters, and district workshops at Nakuru; two European houses, six African quarters, an office and store at Ruiru, and the erection of African houses at Thomson's Falls.

As stated last year, priority in soil conservation work is given where it can form part of a comprehensive farm plan. Progress was mainly confined to Nakuru district where, of 11 farms totalling 8,618 acres that were surveyed and mapped, the Agricultural Officer and Senior Assistant Soil Conservation Officer were able to complete farm plans for six farms covering 6,548 acres.

Inspectors, who are responsible for applying the Land and Water Preservation Ordinance, work under Agricultural Officers in districts and are responsible for ensuring that soil conservation works are maintained and for recommending to the Director the issue of orders for the closure of land to cultivation, or its protection by terracing where there is danger of erosion. They advise farmers on the correct methods of ploughing to protect terrace systems, and they control the African River Scouts. Through the latter considerable areas of squatter lands are protected. For example, 6,000 acres of land were laid out with filter strips in Nyanza, while it was possible in the Aberdare district, where the 1945 Land Conservation Rules apply, to secure the afforestation of steep slopes by squatters.

Some interest was created in terracing and contour planting of sisal and coffee. The greatest danger of erosion in sisal planted on slopes occurs in the first two or three years after planting out in the field, subsequently grass and bush being allowed to grow and being slashed back annually. It is customary to plant sisal up and downhill for ease of access to railway systems. Three estates undertook the experimental planting of sisal on the contour, parallel to master contours laid out by levellers, modified arrangements of light railways having been suggested by the Senior Soil Conservation Engineer. With coffee a number of trials were laid down by the Assistant Soil Conservation Officer, Ruiru, in which various systems of contour planting of coffee in conjunction with narrow base and broad base terraces were incorporated.

Soil Conservation—African Areas

The work in all Provinces aims at the establishment of soil control in African areas by improving agricultural practices and the systems of farming. These include the consolidation of economic holdings, enclosure of land and paddocking, the use of cattle and manure and of alternate husbandry where it is possible to establish grass leys.

In Nyanza the aim has been to secure lateral continuity of uncultivated strips, with lateral continuity of cultivation or ploughing and planting, on slopes under 8 per cent and of narrow base terraces above 8 per cent. An exception to this is the Highlands Division of South Nyanza where nearly all the land is well protected by trash lines. Protection generally in South Nyanza and Kericho is good but soil conservation measures in Central and North Nyanza are backward. Rough paddocking and grazing control are on the increase in Kericho district, being an advance on the ordinary block closure of grazing practised in the other districts. In the Jaluo country extension of hedging round village cultivations aims at eventual enclosure of land into a system of alternate husbandry.

In the Central Province, the communal effort made good progress by protecting 80,765 acres of land with 20,434 miles of narrow base terraces, a 6.5 per cent increase over 1949. Greater attention now requires to be devoted to the maintenance of past works and, to overcome this, some Africans are showing interest in bench terracing for permanent crops or high-priced cash crops, including coffee, pyrethrum, fruit, potatoes, vegetables and grass for milk production, which will offset the initial costs of terracing and of heavy dressings of manure. Special gangs

in most districts are paid to reclaim the worst eroded areas, while the area planted to grass increased to 11,649 acres, double the 1949 figure. The clearing of useless bush and scrub and its development as grazing was a feature of the work in Meru and Nyeri, the latter district showing outstanding progress in the enclosure of pastures for improved stock management.

In the Rift Valley Province protection to cultivated lands was afforded by narrow base terraces, grass strips or trash lines as appropriate, while grazing lands were rested in Elgeyo and Nandi by a system of block closure. In the Coast Province the use of trash lines, although subject to destruction by white ants, is fairly generally practised until such time as a suitable hedge plant has been found. In the Teita Hills 3,444 acres were protected by narrow base terraces and much attention was given to gully control.

Tree planting was encouraged in the Nyanza and Central Provinces, the Department issuing over 1,000,000 trees from nurseries in the latter Province.

A continued shortage of housing in African areas still hindered the recruitment of the full establishment of the 50 Assistant Agricultural Officers provided in the Development and Reconstruction Authority's scheme to develop soil conservation and improve farming in the African areas.

Water Conservation

The work of the Soil Conservation Engineers was largely taken up with consultation, surveying, designing and checking the dams to be constructed by Nos. 1 and 2 Dam Construction Units of the Department, by contractors in Kericho, South and Central Nyanza districts, and by the Soil Conservation Units in Uasin Gishu and Thomson's Falls.

Mechanized Dam Construction Units

A third Dam Construction Unit was initiated in North Nyanza in July, financed by the North Nyanza African District Council to which the Agricultural Department loaned two European Assistant Soil Conservation Officers, four tractors and the services of the Soil Conservation Engineer, Kitale, as necessary. By the end of the year this unit had built six dams and started two others before the onset of the rains. Initial teething troubles, shortage of equipment and rain, only allowed it to work 40 per cent of possible working hours. No. 1 Dam Construction Unit continued to work in the Machakos Reserve, completing five dams under conditions of excessive wear to tractors and plant, which had its effect on costs of operations. It moved into the Machakos European areas towards the end of the year. No. 2 Dam Construction Unit operated in the Northern Uaso Nyiro catchment area throughout the year generally under less severe soil conditions than Machakos. Charges on dam construction were raised to the rate of Sh. 50 per tractor hour.

DAM CONSTRUCTION, 1950

Unit	District of Operation	Dams Completed	Earth in Main Wall	Capacity
			Cu. yd.	*Million gal.*
No. 1 D.C.U.	Machakos	5	98,171	48¼
No. 2 D.C.U.	N. Uaso Nyiro	26	478,287	393½
N.N.D.C.U.	North Nyanza	6	44,260	65½
S.C.S.	Uasin Gishu	10	25,256	17
S.C.S.	Thomson's Falls	—	4,000	—
Departmental Contract	Chepalungu Kericho	19	62,000	95

TABLE F

WORK DONE BY THE SOIL CONSERVATION SERVICE DURING THE YEAR 1950

District	No. of Farms treated by Tractor	Acreage Protected by					Complementary Works				
		Broad Base and V Terraces	Diversion Ditches	Narrow Base Terraces	Bench Terraces	Total	Roads	Excavation	Training Banks	Outlet Drains	Cut-off Drains
							Yards	*Cu. ft.*	*Yards*	*Yards*	*Yards*
Trans Nzoia	38	4,563	112	—	4	4,679	68,191	303,438	—	16,515	34,857
Uasin Gishu	47	4,250	1,737	196	4	6,187	46,517	18,261	—	16,155	29,940
Nakuru	37	4,586	—	172	—	4,758	76,497	46,015	94,401	5,550	36,002
Thomson's Falls ..	23	2,304	955	—	22	3,281	18,711	202,229	5,155	1,961	17,412
Nyanza	18	1,059	—	24	—	1,083	2,703	287,066	—	2,509	3,729
Nairobi	11	221	—	417	15	653	21,675	10,362	1,577	2,964	6,708
Total	174	16,983	2,804	809	45	20,641	234,306	864,371	101,123	45,954	128,648

Water Supplies—African Areas

The larger dams constructed in African areas by the Dam Construction Units in North Nyanza and Machakos have been supplemented by hand labour and ox teams, by contractors and by boring, through finances emanating from the Development and Reconstruction Authority and the African Land Utilization and Settlement, African District Councils and Betterment Funds.

The provision of medium and small hand and ox-made dams were a feature of work in the Machakos and Kitui districts, totalling 63, and in the coastal districts of Malindi, Kilifi and Kwale where 79 were made. While a few dams were made by hand in Central and South Nyanza, in the Sotik division of Kericho a number of dams were put in by a contractor as indicated in the preceding table.

Drainage

The productivity of large areas of land in the Kenya Highlands could be appreciably raised were suitable systems of surface or sub-surface drainage devised. Trials with mole draining and shallow contour drains, with increased falls in normal terrace systems, with protection by cut-off drains and diversion ditches with a system of ridge and furrow, have given variable results. Fuller investigation into drainage methods is required.

EDUCATION

Egerton School of Agriculture

Additional housing and farm buildings and extensions to the laboratories were completed. At the end of the year, the school was, for the first time, almost fully staffed with well qualified lecturers. The first Diploma Course entered upon its second year with ten students, five more commencing the first year of this course. Twenty-one students took the fifth Certificate Course which provides a year of essentially practical training in Kenya mixed farming. The demand for Egerton trained men for employment in Government departments and as farm managers at present far exceeds the supply. Thirty-two students attended the three Refresher Courses for established farmers, two being given in Animal Husbandry and one in Mixed Farming. The fully-developed school farm of 600 acres run on a system of alternate husbandry, provided the basis of practical instruction in crop and animal husbandry and farm management.

African Areas

In Nyanza the training of the 53 Agricultural Instructors in their first and second years was transferred from Bukura to the Siriba Combined Training Centre run by the Education Department for training its own teachers and staff of the Agricultural, Veterinary and Medical Departments for that Province. An Assistant Agricultural Officer was seconded to the Centre to run the farm and assist with agricultural instruction. The Bukura Farm Institute was used exclusively for training 19 African families in farm holdings, 13 on a group farming basis and six on individual holdings. In addition, 118 Agricultural Instructors attended two refresher courses of a fortnight's duration each. At the Embu Agricultural School 60 apprentices were in their first and second years of training as Instructors for the Central Province, while it was still necessary to run a one-year Certificate Course for Instructors from those areas where education is still backward. The development of a small part of the school farm provided practical instruction which was supplemented by visits to other districts and holdings. At the Coast the Kibarani Agricultural Training School for Instructors had 25 pupils on the roll of the first and second-year Courses. It has not yet been possible to give suitable training to the Instructors of the Rift Valley Province on account of the low standard of education among the local tribes. In all Provinces, the closest contact was maintained with schools with the object of giving practical instruction in manure and compost making, rotations, soil conservation measures, and the running of their school gardens or farms.

Grading and Inspection Services, Mombasa

While the number of packages inspected under imports was nearly double that of the previous year at 177,840, inspections of exports included 108 Phytopathological certificates and 32,892 bags of castor seed to ensure that bags were properly sewn and marked. Of the 344,653 bags of maize received for grading, it was necessary to reject 23,672 bags mainly on account of weevil infestation or wetness. Commercial white haricot beans graded, totalled 26,842 bags and seed beans fell to 3,877 bags due to the waiving of compulsory grading for seed beans. Potatoes offered for grading amounted to 72,911 cwt. and of this it was necessary to reject 3.5 per cent. Grading of 17,384 bags of wheat offered for shipment was undertaken. Unlike small red chillies (*Capsicum minimum*), out of 5,550 bags of which 3,094 were undergrade and 664 rejected, the quality of capsicums (*Capsicum annuum*) inspected was quite high, 108 bags only out of a total of 36,201 bags being rejected and 23,654 bags representing fair average quality.

The Conditioning Plant treated 243,266 bags of maize, wheat, beans, peas, cowpeas and grams in 1950 compared with 64,479 bags in 1949. A bag cleaning machine installed during the year did not come into operation awaiting wiring of the motor. The reduction in the quantity of seed beans submitted for fumigation continued and in all 14,900 bags of seed beans and other seeds and produce were fumigated.

Financially the gap between expenditure and revenue was considerably reduced as forecast last year.

Produce Marketing and Inspection

The export of produce from many districts of Central Province was prohibited for the greater part of the year and the produce inspection staff was largely employed on preventive measures. Export was allowed after the long rains crops had been harvested but unfortunately considerable quantities of maize avoided the inspectorate and did not reach Control, the hungry Ukamba districts offering a ready and more profitable market. The appointment of European Wattle Inspectors in Central Province was of very great assistance at the Wattle Inspection Centres. The establishment of four European Marketing Officers for the Province was maintained and they again stressed the need for an organization to handle the marketing of horticultural produce. The total value of produce marketed during the year was £1,707,805 which represents a little less than Sh. 80 per taxpayer.

In Nyanza Province the marketing of the record maize crop presented considerable problems to those concerned; storage facilities at railheads were inadequate as also was rolling stock. Consequently there were many stoppages in the flow of maize which in some cases prevented the immediate sale by the producer. By the end of the year the Marketing Officers and Maize Control had met all difficulties and successfully moved and stored the enormous crop; by that time also, the railhead storage situation had improved by the erection of auxiliary buildings. Local markets were opened and closed in accordance with the current food situation which was most carefully watched. Cassava was marketed in quantity during the first half of the year but buying then eased because of the locust menace. Millets were retained on the homestead and little was offered to Control. The wheat crop of South Nyanza and Kericho African areas was bought by Kenya Farmers' Association agents. Sisal fibre was inspected at the factories of licensees. The tightening up of inspection at cotton buying posts greatly improved the quality of the cotton crop as also did the cessation of competitive buying in most districts. The record South Nyanza coffee pick was marketed through the new growers' co-operative organization.

As in previous years, organized marketing in Coast Province applied only to cashew nuts, cotton, copra and to a lesser extent vegetables and kapok. The proposed Coast Province Produce Marketing, Improvement and Inspection Rules were being finalized at the close of the year.

In the African areas of Rift Valley Province 81,500 bags of squatter produce were inspected at Elburgon consisting mainly of maize and potatoes, whilst 44,000 bags of maize were inspected in the Nandi district. European produce was subjected to the usual inspection by the various Farmers' Associations, Controls and Boards.

Library

Some 475 books (including sets of the new edition of the Laws of Kenya) were added to the Library during the year and the "Journal of Experimental Botany" was added to the journals already taken by the Department. Some 2,300 publications were circulated in addition to those sent to out-stations for retention. Although there were only 19 new deposits by members of the public, considerable use was made of the Library by existing depositors and by casual inquirers who called here. Visits were made by the Librarian to the Provincial Headquarters at Nakuru, to Egerton School, Njoro, the Horticultural Station, Molo, the Soil Conservation Service, Kitale, and the Coffee Research Station, Ruiru, to carry out library checks during the course of the year.

Publications

Early in the year the Department issued its first "Annual Review", with the object of bringing to the notice of the farming community and others interested the results and findings of the Department on a number of subjects during the past year, at a date which would enable them to have this information before the beginning of the farming year.

The following is a list of articles contributed by departmental officers to local journals:—

East African Agricultural Journal

Vol. 15—January–April—

"Tomato Blight in Kenya"—R. M. Nattrass, Senior Plant Pathologist.

"A List of Weeds of Kenya Highlands"—A. V. Bogdan, Pasture Research Officer.

"Maintenance of Fertility in Dry Coffee Soils"—H. C. Pereira, Agricultural Chemist, Coffee, and P. A. Jones, Agricultural Officer. (Reprinted in *Coffee Board Bulletin*.)

"The Bulb Eelworm Disease of Narcissus in Kenya"—R. M. Nattrass, Senior Plant Pathologist.

"Loose Smut of Wheat"—R. M. Nattrass, Senior Plant Pathologist.

"Grassland Research in Kenya"—D. C. Edwards, Senior Pasture Research Officer (in "A Colloquium of Grassland Research").

Vol. 16—July–October—

"Pyrethrum Wilt in Kenya Caused by *Sclerotinia minor*"—R. M. Nattrass, Senior Plant Pathologist.

"A Note on the Release of Some New Cereal Varieties—II"—H. C. Thorpe, Senior Plant Breeder.

"Pear Drying"—T. H. Jackson, Agricultural Officer (Hort.), and Barbara E. Roger, Assistant Agricultural Officer (Hort.).

Coffee Board Bulletin

"Further Observations on the Yellowing of Coffee"—H. C. Pereira, Agricultural Chemist (Coffee).

"Soil Conservation in Coffee"—Colin Maher, Senior Soil Conservation Officer.

"Quality and Onion Flavour in Relation to Washing, Over-ripeness and Other Factors"—R. W. Rayner, Plant Pathologist and Physiologist (Coffee).

"Results of the Multiple Stem Questionnaire"—R. W. Rayner, Plant Pathologist and Physiologist (Coffee).

"Coffee Berry Disease"—R. W. Rayner, Plant Pathologist and Physiologist (Coffee).

East African Field, Farm and Garden

"Hybrid Maize—The Future Prospects in Kenya"—H. C. Thorpe, Senior Plant Breeder.

"Stubble Mulch Farming: Recommendation to Kenya"—Colin Maher, Senior Soil Conservation Officer.

"Shallow Ploughing—The Danger of Too Many Disturbances of the Soil"—Colin Maher, Senior Soil Conservation Officer.

"Disc or Mouldboard—The Plough for Kenya"—Colin Maher, Senior Soil Conservation Officer.

"Pasture Research in Australia—and Prospects in Kenya"—J. L. Schofield, Pasture Research Officer.

"Manuring in Sisal Management"—E. Bellis, Soil Chemist. (Reprint of talk at Sisal Research Station Field Day.)

"Not Only the Toad Suffers Under the Harrow"—Colin Maher, Senior Soil Conservation Officer.

"Crops for Feeding Livestock in Kenya During the Dry Season"—G. H. Chaundy, Principal, Egerton School of Agriculture.

"Musts, Must-nots and Maize"—Colin Maher, Senior Soil Conservation Officer.

K.I.O. Fortnightly

"Maize Seed Selection"—H. C. Thorpe, Senior Plant Breeder.

"Recommended Varieties of Cereals to Grow in the Coming Season 1950-51"—H. C. Thorpe, Senior Plant Breeder.

"Release of New Cereal Varieties"—H. C. Thorpe, Senior Plant Breeder.

"Note for Farmers Wishing to Produce Certified Seed of Wheat, Barley and Oats"—H. C. Thorpe, Senior Plant Breeder.

"*Cestrum Aurantiacum* to be Scheduled as a Noxious Weed"—R. M. Nattrass, Senior Plant Pathologist.

"Hybrid Maize"—H. C. Thorpe, Senior Plant Breeder.

Other publications by members of the Department which appeared during the year were:—

"Pyrethrum Breeding in Kenya"—E. W. Gaddum, Senior Agricultural Officer (Pyrethrum). Booklet published by the Pyrethrum Board of Kenya.

"International Agricultural Research in Germany: The Volkenrode Centre—*Nature* 165. 419"—J. L. Schofield, Pasture Research Officer.

"'Serradella' (*Sativus*) A Legume for Light Acid Soils—Journal of British Grassland Society, Vol. 5, No. 2"—J. L. Schofield, Pasture Research Officer.

"Overcoming Adverse Climate in Deciduous Fruit Production"—Veld—T. H. Jackson, Agricultural Officer (Hort.).

AGRICULTURAL LEGISLATION

The following comprises the more important legislative changes during the year:—

The Tea Ordinance.—The existing Tea Ordinance which was first enacted in 1934 and which, having, as the result of an oversight, been allowed to expire in March, 1948, had to be re-enacted in that year, was designed to enable the restriction of the production of tea in accordance with an International Tea Restriction

Scheme. In 1946 Kenya withdrew from participation in the Restriction Scheme and in 1947 the Ordinance was amended to delete the limitation on the acreage which it was permissible to plant in tea.

The legislation relating to tea in Kenya, Uganda and Tanganyika has up to now been different in each territory. While it has, for some time been considered desirable that the three territories should have identical or nearly identical legislation on this subject it was not until last year that agreement as to the legislation to be introduced was arrived at.

The Ordinance gives effect to the joint recommendations of the three territories.

Sections 3 and 4 of the Ordinance provide for the establishment of a Tea Board and for its incorporation.

Section 5 provides for the procedure and meetings of the Tea Board.

Section 6 enables the Board to nominate persons to represent the Board on any inter-territorial body which may be established.

Sections 7, 8, 9, 10 and 11 deal with planting licences. Section 7 prohibits the planting of tea except under licence. Section 8 provides for the form and contents of an application for a planting licence. Sections 9 and 10 provide for the circumstances in which a planting licence may be cancelled or refused. Section 11 provides that a planting licence shall not be transferable except with the permission of the Board.

Section 12 provides for the powers of the Board to enter and inspect any land and buildings occupied by a licensee.

Section 13 gives the Board power by notice in writing to require any person convicted of the offence of planting tea without a licence or planting tea on more land than his licence allows to uproot the tea so planted.

Sections 14, 15 and 16 provide for controlling the export of manufactured tea. Section 14 prohibits the export of manufactured tea outside East Africa except under permit issued by the Board. The export of not more than two pounds by parcel post, of samples of not more than eight ounces, and the re-export of any quantity, is expressly excluded from the application of the section. Section 15 provides for an appeal to the Governor in Council against a refusal by the Board to issue an export permit. Section 16 provides a penalty for exporting or attempting to export manufactured tea without a permit or in breach of the terms of a permit.

Sections 17, 18 and 19 provide for the imposition, amount and utilization of the proceeds of a cess. Section 17 enables the Governor in Council to impose one or both of two forms of cess, namely a cess on manufactured tea and a cess on the planted acreage. The cess may not exceed four shillings per hundred pounds of manufactured tea or four shillings per acre in the case of a cess on the planted acreage. Section 18 enables the Board to make recommendations to the Governor in Council in relation to the amount of the cess and generally as to the steps which it regards as necessary to protect and promote the interests of the industry. Section 19 prescribes the purposes for which the proceeds of any cess may be used.

Section 20 provides for the audit of the accounts of the Board.

Section 21 enables the Board to require returns from a licensee.

Section 22 prohibits the export of tea seed to any destination outside East Africa.

Section 23 provides for the penalties for an offence against the Ordinance and section 24 provides that any director, manager, secretary or other officer of a body corporate by which an offence was committed shall be equally guilty of the offence if it was committed with his knowledge or approval.

Section 25 provides for the making of rules for carrying out the provisions of the Ordinance.

Section 26 provides for the procedure in appeals to the Governor in Council.

Section 27 provides that the Ordinance shall not apply to the growing of tea by Africans in the native areas.

Section 28 repeals the Tea Ordinance, 1948.

Later in the year this Ordinance was amended by Ordinance No. 58, the Tea (Amendment) Ordinance, 1950.

Section 7 dealing with planting licences was re-worded and a new section, No. 29, was included to meet the assets of the Tea Cess Board in the Tea Board. The Tea Cess Ordinance was repealed.

Sisal Industry (Amendment) Ordinance.—Amends the main Ordinance by the insertion of a new section providing for the control of the growing and production of sisal and sisal fibre by licence, excluding sisal grown in African areas, which is controlled by rules under the Crop Production and Livestock Ordinance.

The African-grown Tea Rules, 1950.—Rule 2 defines the terms used in the Ordinance; rule 3 refers to the areas where tea may be grown by Africans; rules 4–6 lay down the conditions under which such tea may be grown; rule 7 prohibits the disposal of tea for seed purposes and rule 8 the growing of tea except from seedlings obtained with the approval of an inspector and rule 9 the import of seed or seedlings without the permission of the Director of Agriculture. Rules 10 to 13 provide for the inspection of plantations, particularly for the purpose of searching for pests and diseases and to investigate methods of cultivation. Rule 14 provides the powers for implementing an inspector's instructions. Rule 15 prohibits the erection of factories for the manufacture of tea without permission. Rule 16 enables the Director to depute his powers under the rules. Rule 17 prescribes offences under the rules.

The Cashew Nut Marketing Rules, 1950.—After defining the terms used, Part 1 of the Rules deals with the conditions under which unprocessed nuts may be marketed and the issue of licences for the purpose; Part 2 with improvements: inspection and care of land where cashew nuts are grown and the storage of unprocessed nuts; Part 3 with inspection of unprocessed nuts; Part 4 with processing under licence; Part 5 covers miscellaneous points including the inspection of factories, stores, and appeals under the rules.

The Control of Sisal in Native Areas Rules, 1950.—After a definition of the terms used in the Rules, rule 3 prohibits the planting of sisal in native areas except for the purpose of (*a*) demarcating units of land; (*b*) prevention of soil erosion; (*c*) preservation of water resources; (*d*) good husbandry. Rule 4 empowers the Director of Agriculture to order the destruction of all sisal plants which prejudice any or all of the purposes set out in rule 3. Rule 5 prohibits the decortication of sisal leaf and the buying of sisal leaf or fibre in native areas except under licence, but this does not apply to local sales between Africans for purposes other than export from the district. Rules 6–8 lay down the conditions on which licences are issued. Rule 9 empowers the Director to fix and vary the minimum price to be paid for sisal leaf or fibre. Rule 10 lays down that arrangements satisfactory to the Director shall be made for the disposal of waste.

The Sisal Industry (Inspection) Rules, 1950.—Prescribes the inspection, baling and grading of sisal fibre.

Other legislation enacted during the year was as follows:—

Ordinances.—The Coffee Marketing (Amendment) Ordinance (definition of "planter" amended); the Native Foodstuffs (Amendment) Ordinance; Passion Fruit (Amendment) Ordinance; Pyrethrum (Amendment) Ordinance.

Rules and Regulations.—Agricultural Produce Export Ordinance: Castor Seed (Marking of Bags) (Amendment) Rules; Grading of Chillies (Amendment) Rules. Coconut Preservation Ordinance: date of application. Crop Production and Livestock Ordinance: African-grown Coffee Rules (Amendments); Native Produce Improvement and Inspection (Amendment) Rules, 1950; the Samburu (Grazing Control) Rules, 1950; the Wattle Bark Improvement and Inspection (Amendment) Rules, 1950. Crown Lands Ordinance: North Yatta (Grazing Control) Rules, 1950; North Yatta (Soil Conservation) Rules, 1950; Yatta Plateau (Grazing Control) Rules, 1950, and Yatta Plateau (Soil Conservation) Rules, 1950.

Emergency Laws.—Control of Copra and Coconut Oil Order, 1943: (Amendment); Control of Hides, Skins and Leather (Amendment) Regulations, 1950; Control of Maize Regulations, 1944: amendment to schedule, prices, prohibition of sales and movements; Control of Paddy and Rice Regulations, 1943: amendment; Controlled Produce Regulations, 1944: amendment, order, prices; Movement of Controlled Produce (Amendment) Order, 1950. European Agricultural Settlement Regulations: amendments. Hide and Skin Trade Ordinance, 1948: date of operation, Rules, 1950, Imposition of Cess (Amendment) Rules, 1950. Increased Production of Crops: usual orders, appointment of marketing agents; Subsidies for Fertilizers, 1950. Land and Water Preservation Ordinance, 1943: General (Amendment) Rules, 1950. Marketing of Native Produce Ordinance, 1935: Licence Fees Rules, 1950, schedule. Native Lands Trust Ordinance, 1938: Keyan-Thigori (Land Utilization) Rules, 1950, Oyani-Thigori (Land Utilization) Rules, 1950. Passion Fruit Ordinance, 1937: (Amendment) Rules, 1950. Plant Protection Ordinance, 1937: declaration of infected area, pests order, sunflower order, notice under the Rules. Pyrethrum Ordinance: Levy.

STAFF

Mr. G. M. Roddan left the Department in May to take up the post of Director of Agriculture in Nyasaland and Mr. R. E. T. Hobbs was promoted to be Deputy Director of Agriculture in his place. In the same month Dr. C. C. Webster arrived to take up the newly-created appointment of Assistant Director (Research). Mr. J. R. Dearden was secured at the end of 1949 to fill the vacancy of Administrative Secretary.

Mr. Colin Maher retired in June after nearly 13 years in his post as Senior Soil Conservation Officer during which he mustered and built up the Soil Conservation Service into its present form. Another loss to the Department was the resignation from the post as Principal, Egerton School of Agriculture, of Mr. G. H. Chaundy, M.B.E., whose place was filled by Mr. T. M. Bell, Senior Agricultural Officer, pending the procurement of a new Principal.

The shortage of specialist officers remained acute, thus throwing a great burden on the senior officers and severely limiting the volume of urgent work which could be undertaken.

The year started with a deficiency of six Agricultural Officers out of an establishment of 23 and this position did not materially improve. The lack of Assistant Agricultural Officers was also acute but this position improved slightly by the end of the year, the majority of the recruits being found locally.

There was a keen demand from Africans for vacancies in the pensionable establishment, particularly from better educated African boys wishing to become Levellers in the Soil Conservation Service. The vacancies in our training schools, from which Agricultural Instructors are drawn, were filled without difficulty. The Agricultural Instructor establishment was slightly below strength but this was mainly due to lack of European officers to supervise a larger number of men. The quality of African clerical recruits remained a gamble.

G. M. RODDAN,
Director of Agriculture.

G.P.K. 74—625—1/52